This document gives pertinent information concerning reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.026 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1. Facility Name and Mailing Address: Salvation Army Camp Happyland, 2626 Pennsylvania Ave. NW, Washington, DC 20037 — SIC Code: 4952 WWTP

   Facility Location: 21457 Happyland Drive, Richardsville, VA 22736 — County: Culpeper

   Facility Contact Name: Captain Timothy Delaney — Telephone Number: 202-756-2600

   Facility E-mail Address: Tim_Delaney@uss.salvationarmy.org

2. Permit No.: VA0074381 — Expiration Date of previous permit: October 27, 2012

   Other VPDES Permits associated with this facility: N/A

   Other Permits associated with this facility: N/A

   E2/E3/E4 Status: N/A

3. Owner Name: Salvation Army

   Owner Contact/Title: Colonel John R. Jones — Telephone Number: 202-756-2600

   Owner E-mail Address: John_Jones@uss.salvationarmy.org

4. Application Complete Date: May 2, 2012

   Permit Drafted By: Joan C. Crowther — Date Drafted: October 29, 2012

   Draft Permit Reviewed By: Alison Thompson — Date Reviewed: November 1, 2012

   WPM Review By: Bryant Thomas — Date Reviewed:

   Public Comment Period: Start Date: — End Date:

5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination

Receiving Stream Name:	Hazel Run, UT	Stream Code:	XED
Drainage Area at Outfall:	0.51sq.mi.	River Mile:	0.37
Stream Basin:	Rappahannock River	Subbasin:	N/A
Section:	4	Stream Class:	III
Special Standards:	N/A	Waterbody ID:	VAN-E18R
7Q10 Low Flow:	0.0 MGD	7Q10 High Flow:	0.0 MGD
1Q10 Low Flow:	0.0 MGD	1Q10 High Flow:	0.0 MGD
30Q10 Low Flow:	0.0 MGD	30Q10 High Flow:	0.0 MGD
Harmonic Mean Flow:	0.0 MGD	30Q5 Flow:	0.0 MGD

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

- ✓ State Water Control Law
- ✓ Clean Water Act
- ✓ VPDES Permit Regulation
- ✓ EPA NPDES Regulation
- ✓ EPA Guidelines
- ✓ Water Quality Standards
- ___ Other

7. Licensed Operator Requirements: Class III

8. Reliability Class: Class II

9. Permit Characterization:

✓ Private	___ Effluent Limited	___ Possible Interstate Effect
___ Federal	✓ Water Quality Limited	___ Compliance Schedule Required
___ State	___ Toxics Monitoring Program Required	___ Interim Limits in Permit
___ POTW	___ Pretreatment Program Required	___ Interim Limits in Other Document
✓ TMDL		

10. Wastewater Sources and Treatment Description:

The facility is owned and operated by the Salvation Army and serves as a place for underprivileged children and adults to participate in recreational and leadership activities. The wastewater treatment plant (WWTP) serves the following buildings: six adult cabins, seven youth cabins, and one officer's cabin. All flows run by gravity to the plant with the exception of the officer's cabin, which requires a small pump station. This station has both a visual and audible alarm that signals high levels in the wet well and or problems with the pump. During the active camp season, June 15 through August 15, there are approximately 275 participants each week along with the camp staff. During the off season, the camp is used only periodically.

The most recent plant upgrade was in 1992 and consisted of screening, extended aeration (oxidation ditch), secondary clarification with scum removal, sludge digestion, tablet chlorination, tablet dechlorination, and post aeration. Digested sludge is hauled to the Remington STP (VA0076805) for final treatment and disposal by a contract hauler.

At the plant's headworks, there is a bar screen. Aerators are left on continuously in the oxidation ditch. The clarifier has an outer ring that collects scum as it enters the clarifier; periodically, the operator must flush out the ring and collect the scum in a collection box at the end of the ring. The collected scum is then pumped back to the oxidation ditch. This procedure is supposed to happen passively, but due to the low level maintained in the oxidation ditch, the operator must pump it manually. Clarifier solids are either sent back to the oxidation ditch or over to an aerated digester via a common pump. A separate blower powers the airlines in the digester.

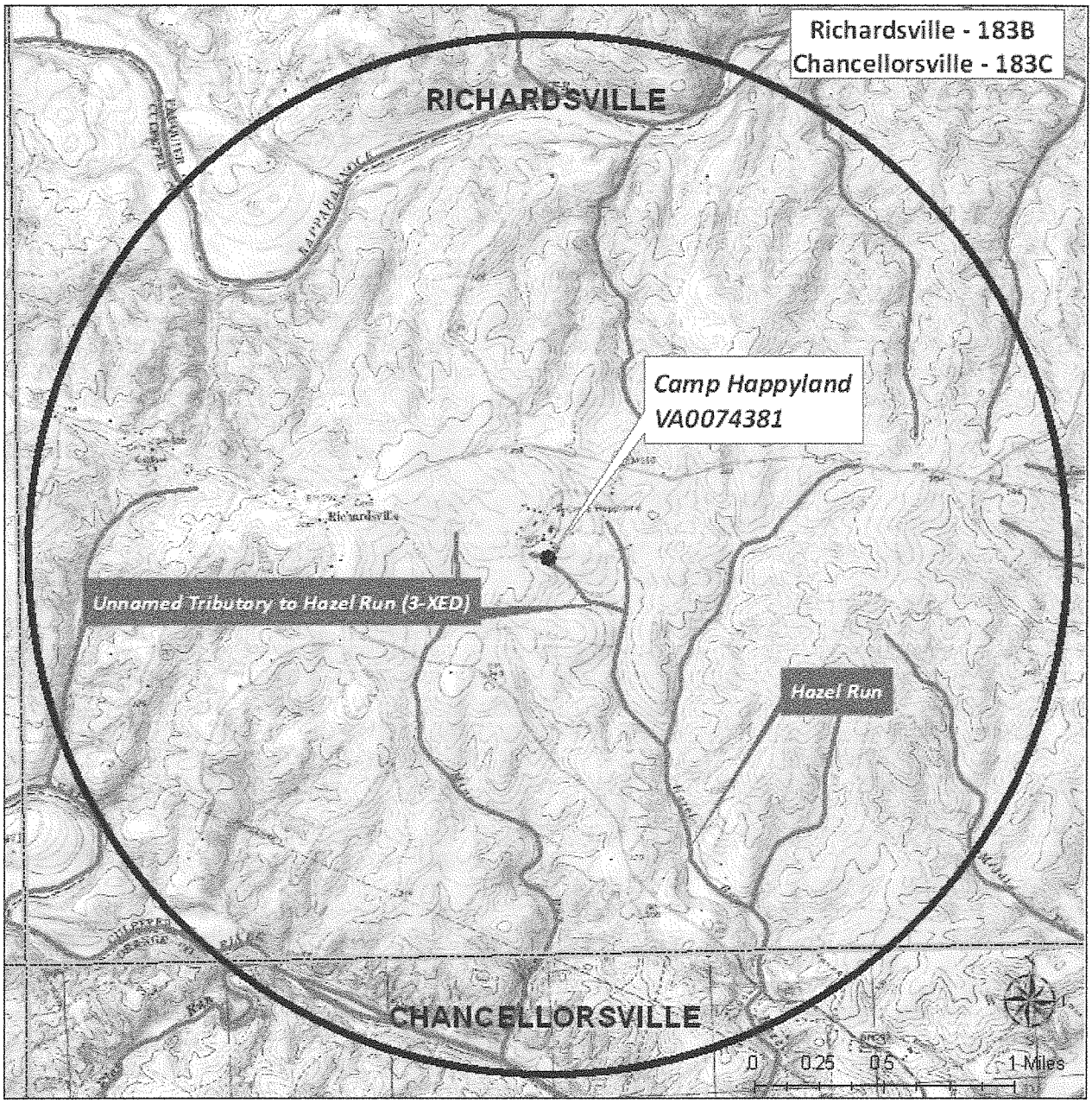
Following clarification, the water flows through a Sanuril chlorination unit where calcium hypochlorite is added via a four tube tablet feeder. Flow then runs through a baffled contact chamber and then through another four-tube feeder loaded with sodium sulfite tablets for dechlorination. The flow is then aerated in the final chamber by passing over the weir where flow measurements are taken prior to discharge through Outfall 001 approximately 100 feet away.

See Attachment 2 for a facility schematic/diagram.

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Design Flow(s)	Outfall Latitude and Longitude
001	Domestic Wastewater	See Item 10 above.	0.026 MGD	38° 23' 50" N 77° 42' 44" W

USGS Topographic Maps: Richardsville and Chancellorville (DEQ Nos. 183B; 183C, respectively)



11. Sludge Treatment and Disposal Methods:

Sludge is aerobically digested in a holding tank, with a minimum reduction in volatile solids of 38 percent, prior to disposal. Sludge is pump and hauled by Butler and Eicher to the Remington WWTP (VA0076805) where further treatment is provided through aerobic digestion.

12. DEQ Monitoring Station in Vicinity of Discharge

TABLE 2
DEQ Ambient Water Quality Monitoring Station within 2 mile radius of Camp Happyland

DEQ AWQM	Description
3-HAE001.00	Ambient Monitoring Station located on Hazel River, approximately 2.5 miles downstream at Route 610 Bridge

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Hydrated Lime	50 pounds	Stored in a covered plastic trash can near headworks for spill/overflow clean up.
Chlorine Tablets	2 buckets	Stored covered, inside the storage shed.
Dechlorination Tablets	2 buckets	Stored covered, inside the storage shed.

14. Site Inspection:

Performed by Ms. Wilamena Harback on July 29, 2008. (See Attachment 3).

15. Receiving Stream Water Quality and Water Quality Standards:

a) Ambient Water Quality Data

The receiving stream is an unnamed tributary to Hazel Run (3-XED). There is no monitoring data for the receiving stream. The unnamed tributary to Hazel Run flows into Hazel Run.

The nearest downstream DEQ water quality monitoring station is Station 3-HAE001.00, located on Hazel Run approximately 2.5 rivermiles downstream from Outfall 001. The following is the water quality summary for this segment of Hazel Run, as taken from the Draft 2012 Integrated Report*:

DEQ ambient water quality monitoring station 3-HAE001.00 is at the Route 610 Bridge. This station is located within Rappahannock River Basin's Section 4, and classified as a Class III water.

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. This impairment is nested within the downstream completed bacteria TMDL for the Rapidan River.

The aquatic life use is considered fully supporting. The wildlife and fish consumption uses were not assessed.

b) 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

Impairment Information in the Draft 2012 Integrated Report*							
Waterbody Name	**Impaired Use**	**Cause**	**Distance From Outfall**	**TMDL completed**	**WLA**	**Basis for WLA**	**TMDL Schedule**
Hazel Run	Recreation	*E. coli*	2.5 miles	No, but nested within the Rapidan River Bacteria TMDL (12/05/2007)	**4.52E+10 cfu/year**	Maximum Design Flow: **0.026 MGD** E. coli Geometric Mean Criterion: **126 cfu/100mL**	—

*The Draft 2012 Integrated Report (IR) has been through the public comment period and reviewed by EPA. The 2012 IR is currently being finalized and prepared for release.

The planning statement dated October 3, 2012 can be found in Attachment 4.

c) Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Hazel Run, UT is located within Section 4 of the Rappahannock River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

The Freshwater Water Quality Criteria / Wasteload Allocation Analysis that was established during the 2007 permit reissuance is being carried forward as part of this permit reissuance process. Therefore, the previously established 2007 90th percentile pH and temperature values are also carried forward as part of this reissuance process. The pH 90th and 10th percentile values were determined using the maximum pH values reported on the facility's DMRs from January 2004 to July 2007 (See Attachment 5). The temperature 90th percentile value of 26.5 °C was determined from effluent data collected during January 1999 to April 2002 (See Attachment 5). This analysis details water quality criteria applicable to the receiving stream and can be found in Attachment 6.

Ammonia:
The fresh water, aquatic life Water Quality Criteria for Ammonia is dependent on the instream temperature and pH. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream. Because the 7Q10 and 1Q10 of the receiving stream are 0.0 MGD, effluent pH and temperature data may be used to establish the ammonia water quality standard.

Metals Criteria:
The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). The 7Q10 of the receiving stream is zero and no ambient data is available, the effluent data for hardness can be used to determine the metals criteria. The hardness dependent metals criteria in Attachment 6 are based on average effluent value of 189 mg/L that was taken from the 2002 permit reissuance's effluent data collected: December 1999 – 143 mg/L; September 2000 – 237 mg/L and September 2001 – 186 mg/L.

Bacteria Criteria: The Virginia Water Quality Standards (9VAC25-260-170 B.) states sewage discharges shall be disinfected to achieve the following criteria:

E. coli bacteria per 100 ml of water shall not exceed a monthly geometric mean of 126 n/100 mls for a minimum of four weekly samples taken during any calendar month.

d) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Hazel Run, UT, is located within Section 4 of the Rappahannock River Basin. There are no special standards designated to this Water Quality Section.

e) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on October 26, 2012, for records to determine if there are threatened or endangered species in the vicinity of the discharge. The state threatened green floater (*Lasmigona subviridis*) was identified within a 2 mile radius of the discharge. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and protect the threatened and endangered species found near the discharge. See Attachment 7 for the database search results.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on an evaluation of 7Q10 and 1Q10 MGD being 0.0 MGD. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:
Effluent data obtained from DMRs for the period of June 2006 through August 2012 was reviewed and determined to be suitable for evaluation and the following exceedances of the established limitations were noted:

Total Suspended Solids: December 2009, June 2010 and November 2011

TKN: June 2010.

The following pollutants require a wasteload allocation analysis: Ammonia as N and Total Residual Chlorine.

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o[Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- C_o = In-stream water quality criteria
- Q_e = Design flow
- Q_s = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow

C_s = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

c) Effluent Limitations Toxic Pollutants, Outfall 001 –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN:

During the 1997 permit reissuance process, staff evaluated ammonia effluent data that had been collected during the previous permit cycle (1/94 through 6/97). The pH and temperature 90th percentile values were 8.3 SU and 25°C, respectively. This data analysis shown that to maintain ammonia water quality standards a 0.7 mg/L monthly average and daily maximum concentration limits would be required. At that time, staff decided to impose 3.0 mg/L TKN monthly average and daily maximum limit instead of the 0.7 mg/L ammonia limit. It was assumed that at a TKN of 3.0 mg/L any remaining nitrogen is in the form of refractory organic compounds that will not be oxidized and that essentially all ammonia has been removed and the ammonia water quality standard will be maintained.

Also during the 1997 permit reissuance process, staff decided to impose a 3.0 mg/L TKN daily maximum limit instead of the normal calculated maximum limit of 1.5 times the monthly average limit. If the 4.5 mg/L TKN daily maximum limitation was used, there would be a potential for the ammonia standard to be violated because the 1.5 mg/L above the 3.0 mg/L TKN could be entirely in the form of ammonia.

Please see Attachment 8 that included the data used to calculate the original ammonia effluent limitations in 1997.

2) Total Residual Chlorine:

Chlorine is used for disinfection and is potentially in the discharge. Staff calculated WLAs for TRC using current critical flows and the mixing allowance. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated WLAs to derive limits. A monthly average of 0.008 mg/L and a weekly average limit of 0.01 mg/L are proposed for this discharge (see Attachment 9).

3) Metals/Organics:

No metals or organics data were available for review; therefore, no effluent limits are proposed.

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), biochemical oxygen demand-5 day (BOD_5), total suspended solids (TSS), total kjeldahl nitrogen (TKN), Total Residual Chlorine, and pH limitations are proposed.

Dissolved Oxygen, and BOD_5 limitations are based on the stream modeling conducted in July1987 and are set to meet the water quality criteria for D.O. in the receiving stream. See Attachment 10.

It is staff's practice to equate the Total Suspended Solids limits with the BOD_5 limits. TSS limits are established to equal BOD_5 limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

This facility has an allocation in the approved Bacteria TMDL for the Rapidan River. The discharge is mainly during the period of June 15 through August 15. It is staff's best professional judgment that *E. coli* monitoring be conducted 1 per week during July of each year to demonstrate compliance with the Water Quality Standards and the wasteload allocation in the approved TMDL.

e) Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Flow, BOD_5, Total Suspended Solids, TKN, pH, Dissolved Oxygen, and Total Residual Chlorine.

The limit for Total Suspended Solids is based on Best Professional Judgement.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual (Revised January 27, 2010).

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD_5 and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

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19. Effluent Limitations/Monitoring Requirements:

Design flow is 0.026 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date. All effluent samples shall be collected at the end of the post aeration tank unless otherwise specified in the following table.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/D	Estimate
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
BOD_5	3,5	30 mg/L 3.0 kg/day	45 mg/L 4.4 kg/day	NA	NA	1/M	Grab
Total Suspended Solids (TSS)	2	30 mg/L 3.0 kg/day	45 mg/L 4.4 kg/day	NA	NA	1/M	Grab
E. coli (Geometric Mean)[a] [b]	3,6	126 n/100mls	NA	NA	NA	1/YR[b]	Grab
Dissolved Oxygen (DO)	3	NA	NA	5.0 mg/L	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	2, 3	3.0 mg/L 0.30 kg/day	3.0 mg/L 0.30 kg/day	NA	NA	1/M	Grab
Total Residual Chlorine (after contact tank)	2, 3, 4	NA	NA	1.0 mg/L	NA	1/D	Grab
Total Residual Chlorine (after dechlorination)	3	0.008 mg/L	0.010 mg/L	NA	NA	1/D	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model- Attachment 10

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.

1/D = Once every day.
1/W = Once every week.
1/M = Once every month.
1/YR = Once per week during July each year.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

[a] Samples shall be collected between the hours of 10 A.M. and 4 P.M.

[b] The permittee shall sample and submit *E. coli* results at the frequency of once every week during July each year. A total of 4 weekly samples shall be used to calculate the geometric mean.

20. Other Permit Requirements:

a) Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.

These additional chlorine requirements are necessary per the Sewage Collection and Treatment Regulations at 9VAC25-70 and by the Water Quality Standards at 9VAC25-260-170. A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more that 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

21. Other Special Conditions:

a) 95% Capacity Reopener. The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month

of any three consecutive month period. The facility is a PVOTW.

b) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

c) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

d) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class III operator.

e) Reliability Class. The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a Reliability Class of II.

f) Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-220.C. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.

g) Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2., and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage

h) TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

22. Changes to the Permit from the Previously Issued Permit:

a) Special Conditions: None

b) Monitoring and Effluent Limitations:
1) *E. coli* monitoring is included based on the approved TMDL for the watershed.

23. Variances/Alternate Limits or Conditions:

There are no variances/alternate limits or conditions contained in this permit.

24. Public Notice Information:

First Public Notice Date: Second Public Notice Date:

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3925, joan.crowther@deq.virginia.gov. See Attachment 11 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

25. Additional Comments:

Previous Board Action(s): None

Staff Comments: None

Public Comment: *State "No comments were received during the public notice." or "Comments received during the public notice are provided in the attached Response to Comments." Include significant VDH, DGIF, DCR and EPA comments in the Response to Comments.*

EPA Checklist: The checklist can be found in Attachment 12.

VA0074318 Camp Happyland Wastewater Treatment Plant
Fact Sheet Attachments

Attachment	Description
1	Flow Frequency Determination Memo dated March 21, 2002 and May 2, 1997
2	Facility Schematic/Diagram
3	Site Inspection by DEQ Compliance Staff on July 29, 2008
4	DEQ Planning Statement dated October 3, 2012
5	2007 Permit Reissuance pH and Temperature Data
6	2007 Freshwater Water Quality Criteria/Wasteload Allocated Analysis dated October 25, 2012
7	DGIF Threatened and Endangered Species Database Search dated October 26, 2012
8	1997 Ammonia Analysis and Calculations
9	Total Residual Chlorine Analysis August 28, 2007
10	Stream Model dated July 1987
11	Public Notice
12	EPA Checklist dated October 26, 2012

Ellinghaus,Matthew

From: Herman,Paul
Sent: Thursday, March 21, 2002 1:22 PM
To: Ellinghaus,Matthew
Subject: Camp Happyland WWTP

Matt,

Back in October, Nazie Walker sent in a flow frequency request form for the Camp Happyland WWTP. She attached a note to the form stating that she was leaving DEQ and this facility was being turned over to you.

I have reviewed the request. As there have been no changes to the location of the discharge point and no additional flow data has been collected at this site, please continue to use the flow frequencies provided for the discharge point and perennial point as presented in my May 2, 1997, memo to James Engbert concerning this facility.

If you have any questions or require additional information, please let me know.

Paul

Paul E. Herman, P.E.
Surface Water Investigations
Dept. of Environmental Quality
(804) 698-4464

Attachment 1

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Water Quality Assessments and Planning
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination
Camp Happyland - #VA0074381

TO: James Engbert, NRO

FROM: Paul E. Herman, P.E., WQAP

DATE: May 2, 1997

COPIES: Ron Gregory, Charles Martin, File

The Camp Happyland discharges to an unnamed tributary to the Hazel Run near Richardsville, VA. Stream flow frequencies are required at this site by the permit writer for the purpose of calculating effluent limitations for the VPDES permit.

At the discharge point, the receiving stream is depicted as a dry ravine on the USGS Richardsville Quadrangle topographic map. The flow frequencies for dry ravines are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, and harmonic mean. Flow frequencies have been determined for the first perennial reach downstream of the discharge point which occurs at the Hazel Run.

The USGS conducted several flow measurements on the Black Walnut Run from 1981 to 1984. The measurements were made near the mouth at Burr Hill, VA. The measurements made by the USGS were correlated with the same day daily mean values from three continuous record gages; one on the Po River near Spotsylvania, VA #01673800, the second on the Contrary Creek near Mineral, VA #01670300, and the third on the Hazel River at Rixeyville, VA #01663500. For each reference gage, the measurements and daily mean values were plotted by the USGS on a logarithmic graph and a best fit line was drawn through the data points. The required flow frequencies from each reference gage were plotted on the regression line and the associated flow frequencies at the measurement site were determined from the graph. The flow frequencies for the measurement site were determined by taking an average of the values determined from each of the three plots.

The flow frequencies at the discharge point were determined by using the values at the measurement site and adjusting them by proportional drainage areas. The data for the reference gages, the measurement site and the discharge point are presented below:

Po River near Spotsylvania, VA (#01673800):

Drainage Area = 77.4 mi^2

1Q10 = 0.12 cfs	High Flow 1Q10 = 5.8 cfs
7Q10 = 0.17 cfs	High Flow 7Q10 = 8.6 cfs
30Q5 = 0.74 cfs	HM = 4.2 cfs

Contrary Creek near Mineral, VA (#01670300):

Drainage Area = 5.53 mi^2

1Q10 = 0.04 cfs	High Flow 1Q10 = 0.64 cfs
7Q10 = 0.05 cfs	High Flow 7Q10 = 0.79 cfs
30Q5 = 0.21 cfs	HM = 0.90 cfs

Hazel River at Rixeyville, VA (#01663500):

Drainage Area = 287 mi^2

1Q10 = 3.8 cfs	High Flow 1Q10 = 64 cfs
7Q10 = 5.7 cfs	High Flow 7Q10 = 74 cfs
30Q5 = 19 cfs	HM = 86 cfs

Black Walnut Run at mouth at Burr Hill, VA (#01667848):

Drainage Area = 12.1 mi^2

1Q10 = 0.04 cfs	High Flow 1Q10 = 1.3 cfs
7Q10 = 0.05 cfs	High Flow 7Q10 = 1.8 cfs
30Q5 = 0.29 cfs	HM = 1.9 cfs

Hazel Run at perennial point:

Drainage Area = 0.31 mi^2

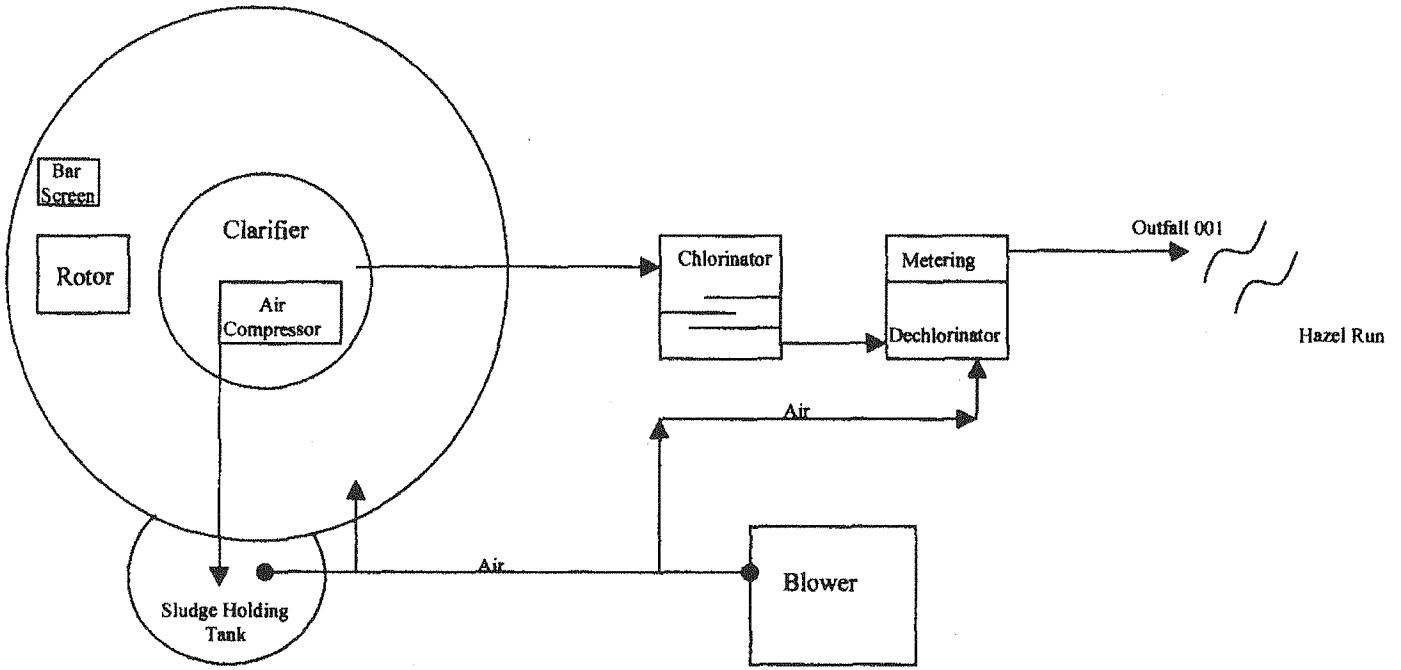
1Q10 = 0.0010 cfs	High Flow 1Q10 = 0.033 cfs
7Q10 = 0.0013 cfs	High Flow 7Q10 = 0.046 cfs
30Q5 = 0.007 cfs	HM = 0.049 cfs

The high flow months are January through April.

This analysis assumes there are no significant discharges, withdrawals or springs influencing the flow in the Hazel Run upstream of the perennial point.

If there are any questions concerning this analysis, please let me know.

Camp Happyland



Note: Not Drawn to Scale

Attachment 2

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3801
www.deq.virginia.gov

Preston Bryant
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

August 22, 2008

Major Algerome Newsome
Salvation Army
2626 Pennsylvania Avenue, NW
Washington D.C., 20037

Re: Camp Happyland STP Inspections, Permit VA0074381

Dear Major Newsome:

Enclosed are copies of the technical and laboratory inspection reports generated from observations made while performing a Facility Technical Inspection at the Camp Happyland – Sewage Treatment Plant (STP) on July 29, 2008. The compliance staff would like to thank Ms. Rebecca Johnsen for her time and assistance during the inspection.

Summaries for both the technical and laboratory inspections are enclosed. The facility had **No Deficiencies** for the laboratory inspection. Please note the requirements and recommendations addressed in the technical summary. Please submit in writing a progress report to this office by **September 22, 2008** for the items addressed in the summary. Your response may be sent either via the US Postal Service or electronically, via E-mail. If you chose to send your response electronically, we recommend sending it as an Acrobat PDF or in a Word-compatible, write-protected format. Additional inspections may be conducted to confirm the facility is addressing the problems found and is in compliance with permit requirements.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at (703) 583-3909 or by E-mail at wgharback@deq.virginia.gov.

Sincerely,

Wilamena Harback

Wilamena Harback
Environmental Specialist II

cc: Permits / DMR File
Compliance Manager
Compliance Auditor
Compliance Inspector
OWCP – (SGStell) EPA Copy
ESS Ltd. – Rebecca Johnson

Attachment 3

VPDES NO. **VA0074381**

Summary of conditions from last inspection
(August 30, 2002)

Problem identified	**Corrected**	**Not Corrected**
1. The facility needs to investigate ways to fine-tune their operations as the camp/plant goes from off-season to full-season status. (The facility had been experiencing a number of Total Kjeldahl Nitrogen (TKN) discharge permit violations.	[**X**]	[ ]

Summary of conditions for current inspection

Recommendations for action:

- **The facility should evaluate the sub-surface aeration to verify that there are no clogged diffusers.**
- **The facility should evaluate the rising solids in the clarifier.**

DEQ
WATER FACILITY INSPECTION REPORT
PREFACE

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
VA0074381	**10/28/07**		**10/27/12**

Facility Name	Address	Telephone Number
Camp Happyland	**21457 Happyland Drive Richardsville, VA 22736**	**540-399-1197**
Owner Name	Address	Telephone Number
Salvation Army	**2626 Pennsylvania Avenue, NW Washington D.C., 20037**	**202-756-2607**
Responsible Official	Title	Telephone Number
Major Algerome Newsome	**Divisional Youth Secretary**	**202-756-2607**
Responsible Operator	Operator Cert. Class/number	Telephone Number
Mr. Larry Myers	**Class II / 1910 002543**	**540-825-6660**

TYPE OF FACILITY:

DOMESTIC				**INDUSTRIAL**			
Federal		Major		Major		Primary	
Non-federal	**X**	Minor	**X**	Minor		Secondary	

INFLUENT CHARACTERISTICS:	DESIGN:
Flow	**0.026MGD**
Population Served	**Variable**
Connections Served	**Camp**

EFFLUENT LIMITS: Units in mg/L unless otherwise specified.

Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**0.03**		**TKN**		**3.0**	**3.0**
pH (S.U.)	**6.0**		**9.0**	**Cl_2 (Total Ct)**	**1.0**		
BOD_5		**30**	**45**	**Cl2 Inst Res Max**		**0.008**	**0.010**
TSS		**30**	**45**	**Cl2 Inst Res Max (Tech)**	**1.0**		
DO	**5.0**			**Inst Cl2 Tech Min**	**0.6**		

Receiving Stream	**Un-named Tributary to Hazel Run**
Basin	**Rappahannock River**
Discharge Point (LAT)	**38° 23' 52" N**
Discharge Point (LONG)	**77° 42' 46" W**

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

No.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the Draft 2012 Integrated Report*							
Hazel Run	Recreation	*E. coli*	2.5 miles	No, but nested within the Rapidan River Bacteria TMDL (12/05/2007)	**4.52E+10 cfu/year**	Maximum Design Flow: **0.026 MGD** E. coli Geometric Mean Criterion: **126 cfu/100mL**	—

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

   There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

   There is a drinking water intake on the Rapidan River that is located within a 5 mile radius of this facility; however, the intake is located upstream from where Hazel Run enters the Rapidan River.

6. See map below.

Crowther, Joan (DEQ)

From: Conaway, Katie (DEQ)
Sent: Wednesday, October 03, 2012 2:39 PM
To: Crowther, Joan (DEQ)
Cc: Thomas, Bryant (DEQ); Carlson, Jennifer (DEQ)
Subject: Planning Statement for Camp Happyland
Attachments: Permit Planning Statement for Camp Happyland - VA0074381.docx

Hi Joan,

Attached is the permit planning statement for Camp Happyland. I haven't done one of these in a while, so let me know if I missed anything.

Thanks,

Katie

Katie Conaway
Virginia Department of Environmental Quality
13901 Crown Court
Woodbridge, VA 22193
703-583-3804
Katie.Conaway@deq.virginia.gov
www.deq.virginia.gov

VPDES NO. **VA0074381**

REV 5/00

DEQ
WATER FACILITY
INSPECTION REPORT
PART 1

Inspection date: **July 29, 2008** Date form completed: **August 22, 2008**

Inspection by: **Wilamena Harback** Inspection agency: **DEQ NRO**

Time spent: **26 hrs** Announced: **Yes**

Reviewed by: **Ed Stuart 08/22/2008** Scheduled: **Yes**

Present at inspection: **Ms. Rebecca Johnsen – ESS Ltd.**

TYPE OF FACILITY:

	Domestic	**Industrial**	
[ ] Federal	[ ] Major	[ ] Major	[ ] Primary
[**X**] Nonfederal	[**X**] Minor	[ ] Minor	[ ] Secondary

Type of inspection:

[**X**] Routine
[ ] Compliance/Assistance/Complaint
[ ] Reinspection

Date of last inspection: **August 30, 2002**
Agency: **DEQ NRO**

Population served: approx. **Varies** Connections served: approx. **Camp**

Last month average: (Effluent) Month/year: **May 2008**

Flow:	**0.006**	**MGD**	pH:	**7.1**	**S.U.**	TSS:	**1.0**	**mg/L**
BOD_5	**<QL**	**mg/L**	DO	**9.7**	**mg/L**	TKN:	**<QL**	**mg/L**

Quarter average: (Effluent) **March – May 2008**

Flow:	**0.006**	**MGD**	pH:	**7.3**	**S.U.**	TSS:	**1.2**	**mg/L**
BOD_5	**<QL**	**mg/L**	DO	**10.2**	**mg/L**	TKN:	**0.7**	**mg/L**

DATA VERIFIED IN PREFACE [ ] Updated [**X**] No changes

Has there been any new construction? [ ] Yes [**X**] No

If yes, were plans and specifications approved? [ ] Yes [ ] No [ ] NA

DEQ approval date: **NA**

(A) PLANT OPERATION AND MAINTENANCE

1. Class and number of licensed operators: I ___ II **2** III ___ IV ___ Trainee
2. Hours per day plant is manned: **~ 2 hour/day**
3. Describe adequacy of staffing. [ ] Good [**X**] Average [ ] Poor
4. Does the plant have an established program for training personnel? [**X**] Yes [ ] No
5. Describe the adequacy of the training program. [**X**] Good [ ] Average [ ] Poor
6. Are preventive maintenance tasks scheduled? [**X**]Yes [ ]No
7. Describe the adequacy of maintenance. [ ] Good [**X**] Average [ ] Poor*
8. Does the plant experience any organic/hydraulic overloading?
   If yes, identify cause and impact on plant: [ ] Yes [**X**] No
9. Any bypassing since last inspection? [ ] Yes [**X**] No
10. Is the standby electric generator operational? [ ] Yes [ ] No* [**X**] NA
11. Is the STP alarm system operational? [ ] Yes [ ] No* [**X**] NA
12. How often is the standby generator exercised? **NA**
    Power Transfer Switch?
    Alarm System?
13. When was the cross connection control device last tested on the potable water service? [**X**] NA
14. Is sludge being disposed in accordance with the approved sludge disposal plan?
    [**X**] Yes [ ] No [ ] NA
15. Is septage received by the facility? [ ] Yes [**X**] No
    Is septage loading controlled? [ ] Yes [ ] No [**X**] NA
    Are records maintained? [ ] Yes [ ] No [**X**] NA
16. Overall appearance of facility: [**X**] Good [ ] Average [ ] Poor

Comments:

14. Liquid sludge is hauled by a septic hauler to the Remington WWTP (VA0076805) for disposal (every two-four months).

(B) PLANT RECORDS

1. Which of the following records does the plant maintain?

Operational Logs for each unit process	[**X**] Yes	[ ] No	[ ] NA
Instrument maintenance and calibration	[**X**] Yes	[ ] No	[ ] NA
Mechanical equipment maintenance	[**X**] Yes	[ ] No	[ ] NA
Industrial waste contribution (Municipal Facilities)	[ ] Yes	[ ] No	[**X**] NA

2. What does the operational log contain?

[**X**] Visual observations	[**X**] Flow measurement
[**X**] Laboratory results	[**X**] Process adjustments
[**X**] Control calculations	[ ] Other (specify)

Comments:

3. What do the mechanical equipment records contain?

[ ] As built plans and specs	[ ] Spare parts inventory
[**X**] Manufacturers instructions	[ ] Equipment/parts suppliers
[**X**] Lubrication schedules	[ ] Other (specify)

Comments:

4. What do the industrial waste contribution records contain? (Municipal Only)

[ ] Waste characteristics	[ ] Locations and discharge types
[ ] Impact on plant	[ ] Other (specify)

Comments: **NA**

5. Which of the following records are kept at the plant and available to personnel?

[**X**] Equipment maintenance records	[**X**] Operational Log
[ ] Industrial contributor records	[**X**] Instrumentation records
[**X**] Sampling and testing records	

6. Records not normally available to plant personnel and their location? **None**

7. Were the records reviewed during the inspection? [**X**] Yes [ ] No

8. Are the records adequate and the O & M Manual current? [**X**] Yes [ ] No

9. Are the records maintained for the required 3-year time period? [**X**] Yes [ ] No

Comments:

8) Original O&M was dated December 12, 1997. An O&M update was hand delivered to DEQ staff during the inspection. The facility had recently installed a new effluent flow meter (ISCO Model 3010 Ultrasonic Flowmeter) and Chart Recorder (Honeywell DR4300, 10" Circular Chart Recorder) in June 2008.

(C) SAMPLING

1. Do sampling locations appear to be capable of providing representative samples? [**X**] Yes [ ] No*
2. Do sample types correspond to those required by the VPDES permit? [**X**] Yes [ ] No*
3. Do sampling frequencies correspond to those required by the VPDES permit? [**X**] Yes [ ] No*
4. Are composite samples collected in proportion to flow? [ ] Yes [ ] No* [**X**]NA
5. Are composite samples refrigerated during collection? [ ] Yes [ ] No* [**X**]NA
6. Does plant maintain required records of sampling? [**X**] Yes [ ] No*
7. Does plant run operational control tests? [**X**] Yes [ ] No

   Comments:

(D) TESTING

1. Who performs the testing? [**X**] Plant [ ] Central Lab [**X**] Commercial Lab
   Name:
   Camp Happyland – pH, DO and Chlorine
   ESS Ltd. – TKN, TSS, and BOD_5

If plant performs any testing, complete 2-4.

2. What method is used for chlorine analysis? **HACH DPD Pocket Colorimeter**
3. Does plant appear to have sufficient equipment to perform required tests? [**X**] Yes [ ] No*
4. Does testing equipment appear to be clean and/or operable? [**X**] Yes [ ] No*

   Comments:

(E) FOR INDUSTRIAL FACILITIES WITH TECHNOLOGY BASED LIMITS ONLY

1. Is the production process as described in the permit application? (If no, describe changes in comments)
   [ ] Yes [ ] No [**X**] NA
2. Do products and production rates correspond as provided in the permit application? (If no, list differences)
   [ ] Yes [ ] No [**X**] NA
3. Has the State been notified of the changes and their impact on plant effluent? Date:
   [ ] Yes [ ] No* [**X**] NA

Comments:

Wastewater Treatment Description:

The facility is owned and operated by the Salvation Army and serves as a place for underprivileged children and adults to participate in recreational and leadership activities. The sewage treatment plant (STP) serves the following buildings: six adult cabins, seven youth cabins, one officer's cabin, and one large kitchen. (The kitchen has one large manual grease trap that is periodically cleaned out to prevent any grease from going to the STP.) All flows run by gravity to the plant with the exception of the officer's cabin, which requires a small pump station. This station has both a visual and audible alarm that signals high levels in the wet well and or problems with the pump. During the active camp season, June 15 through August 15, there are approximately 275 participants each week along with the camp staff. During the off season, the camp is used only periodically.

The most recent plant upgrade was in 1992 and consisted of screening, extended aeration (oxidation ditch), secondary clarification with scum removal, sludge digestion, tablet chlorination, tablet dechlorination, and post aeration. Digested sludge is hauled to the Remington WWTP for final treatment and disposal by a contract hauler.

At the headworks of the plant, there is a bar screen. Aerators are left on continuously in the oxidation ditch. The clarifier has an outer ring that collects scum as it enters the clarifier; periodically, the operator must flush out the ring and collect the scum in a collection box at the end of the ring. The collected scum is then pumped back to the oxidation ditch. This procedure is supposed to happen passively, but due to the low level maintained in the oxidation ditch, the operator must pump it manually. Clarifier solids are either sent back to the oxidation ditch or over to an aerated digester via a common pump. A separate blower powers the airlines in the digester.

Following clarification, the water flows through a Sanuril chlorination unit where calcium hypochlorite is added via a four tube tablet feeder. Flow then runs through a baffled contact chamber and then through another four-tube feeder loaded with sodium sulfite tablets for dechlorination. The flow is then aerated in the final chamber by passing over the weir where flow measurements are taken prior to discharge through Outfall 001 approximately 100 feet away.

Sludge Treatment and Disposal Methods:

Sludge is aerobically digested in a holding tank, with a minimum reduction in volatile solids of 38 percent, prior to disposal. Sludge is pump and hauled by Butler and Eicher to the Remington WWTP (VA0076805) where further treatment is provided through aerobic digestion.

Material Storage:

Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Hydrated Lime	50 pounds	Stored in a covered plastic trash can near headworks for spill/overflow clean up.
Chlorine Tablets	2 buckets	Stored covered , inside the storage shed.
Dechlorination Tablets	2 buckets	Stored covered, inside the storage shed.

UNIT PROCESS: Screening/Comminution

1.	Number of Units:	Manual:	**1**	Mechanical:	**0**
	Number in operation:	Manual:	**1**	Mechanical:	**0**
2.	Bypass channel provided:		[ ] Yes	[**X**] No*	
	Bypass channel in use:		[ ] Yes	[ ] No	[**X**] NA
3.	Area adequately ventilated:		[**X**] Yes	[ ] No*	
4.	Alarm system for equipment failure or overloads:		[ ] Yes	[**X**] No*	
5.	Proper flow distribution between units:		[ ] Yes	[ ] No	[**X**] NA
6.	How often are units checked and cleaned?		**~1 time per day**		
7.	Cycle of operation:	**Continuous**			
8.	Volume of screenings removed:	**~ 1 5-gallon bucket is filled per week (disposed of via a dumpster to a landfill)**			
9.	General condition:	[**X**] Good	[ ] Fair	[ ] Poor	

Comments:

UNIT PROCESS: Activated Sludge Aeration

1. Number of units: **1** In operation: **1**

2. Mode of operation: **Continuous Aeration (Oxidation Ditch with One Brush)**

3. Proper flow distribution between units: [ ] Yes [ ] No* [**X**] NA

4. Foam control operational: [ ] Yes [ ] No* [**X**] NA

5. Scum control operational: [ ] Yes [ ] No* [**X**] NA

6. Evidence of following problems:
   a. dead spots [ ] Yes* [**X**] No
   b. excessive foam [ ] Yes* [**X**] No
   c. poor aeration [ ] Yes* [**X**] No
   d. excessive aeration [ ] Yes* [**X**] No
   e. excessive scum [ ] Yes* [**X**] No
   f. aeration equipment malfunction [ ] Yes* [**X**] No
   g. other (identify in comments) [ ] Yes* [**X**] No

7. Mixed liquor characteristics (as available): **07/08/2008**
   MLSS: **3080 mg/L**
   MLVSS: **2320 mg/L**

8. Return/waste sludge:
   a. Return Rate:
   b. Waste Rate: **~ 200 gal/day**
   c. Frequency of Wasting: **Daily (May – October)**

9. Aeration system control: [ ] Time Clock [ ] Manual [**X**] Continuous [ ] Other (explain)

10. Effluent control devices working properly (oxidation ditch): [**X**] Yes [ ] No* [ ] NA

11. General condition: [**X**] Good [ ] Fair [ ] Poor

Comments:

- **The facility has a small single ring oxidation ditch with one surface (brush) aerator and several sub-surface aerators with diffusers. There was one area just after the surface aerator that had vigorous agitation close to a sub-surface aerator. The operations staff stated this is an extra aerator that is slated to be taken off-line and checked due to the vigorous aeration.**

- **If needed, lime is available to add for alkalinity and/or pH control.**

UNIT PROCESS: Sedimentation

[ ] Primary [**X**] Secondary [ ] Tertiary

1.	Number of units: **1**	In operation: **1**		
2.	Proper flow distribution between units:	[ ] Yes	[ ] No*	[**X**] NA
3.	Signs of short circuiting and/or overloads:	[ ] Yes	[**X**] No	
4.	Effluent weirs level: Clean:	[**X**] Yes [**X**] Yes	[ ] No* [ ] No*	
5.	Scum collection system working properly:	[**X**] Yes	[ ] No*	[ ] NA
6.	Sludge collection system working properly:	[**X**] Yes	[ ] No*	
7.	Influent, effluent baffle systems working properly:	[**X**] Yes	[ ] No*	
8.	Chemical addition: Chemicals:	[ ] Yes	[**X**] No	
9.	Effluent characteristics: **Clear**			
10.	General condition:	[ ] Good	[**X**] Fair	[ ] Poor

Comments:

- **There were some rising solids in the clarifier, but the effluent was still clear.**

6) Sludge is collected and transferred to the Aerobic Digester via an Airlift by blower system. The current system has a setpoint of 75% of the influent flow.

UNIT PROCESS: Aerobic Digestion

1. Number of units: **1** In operation: **1**

2. Type of sludge treated [ ] Primary [**X**] WAS [ ] Other

3. Frequency of sludge application to digestors: **Daily with wasting**

4. Supernatant return rate: **Not Measured**

5. pH adjustment provided: [ ] Yes [**X**] No
   Utilized: [ ] Yes [ ] No [**X**] NA

6. Tank contents well-mixed and relatively free of odors: [**X**] Yes [ ] No*

7. If diffused aeration is used, do diffusers require frequent cleaning?
   [ ] Yes [**X**] No [ ] NA

8. Location of supernatant return: [ ] Head [ ] Primary [**X**] Other: **Oxidation Ditch**

9. Process control testing:
   a. reduction of volatile solids [ ] Yes [**X**] No
   b. pH [ ] Yes [**X**] No
   c. alkalinity [ ] Yes [**X**] No
   d. dissolved oxygen [ ] Yes [**X**] No

10. Foaming problem present: [ ] Yes* [**X**] No

11. Signs of short-circuiting or overloads: [ ] Yes* [**X**] No

12. General condition: [**X**] Good [ ] Fair [ ] Poor

Comments:

- **The facility typically removes solids from the digester 2-4 times per year.**

UNIT PROCESS: Chlorination

1 No. of chlorinators: **1** In operation: **1**

2. No. of evaporators: **0** In operation: **0**

3. No. of chlorine contact tanks: **1** In operation: **1**

4. Proper flow distribution between units: [ ] Yes [ ] No* [**X**] NA

5. How is chlorine introduced into the wastewater?
   [ ] Perforated diffusers
   [ ] Injector with single entry point
   [**X**] Other **Tablet Feeder (4 Tubes potential but currently only using two tubes)**

6. Chlorine residual in basin effluent: **The facility was not discharging at the time of inspection.**

7. Applied chlorine dosage: **Two Tubes filled. ~ 4-5 Tablets per day**

8. Contact basins adequately baffled: [**X**] Yes [ ] No*

9. Adequate ventilation:
   a. cylinder storage area [**X**] Yes [ ] No*
   b. equipment room [**X**] Yes [ ] No*

10. Proper safety precautions used: [**X**] Yes [ ] No*

11. General condition: [**X**] Good [ ] Fair [ ] Poor

Comments:

UNIT PROCESS: Dechlorination

1. Chemical used: [ ] Sulfur Dioxide [**X**] Bisulfite [ ] Other

2. No. of sulfonators: **0** In operation: **0**

3. No. of evaporators: **0** In operation: **0**

4. No. of chemical feeders: **1** In operation: **1**

5. No. of contact tanks: **0** In operation: **0**

6. Proper flow distribution between units: [ ] Yes [ ] No* [**X**] NA

7. How is chemical introduced into the wastewater?
   [ ] Perforated diffusers
   [ ] Injector with single entry point
   [**X**] Other – **Tablet Feeder (4 Tubes potential but currently only using two tubes)**

8. Control system operational: [ ] Yes [ ] No* [**X**] NA
   a. residual analyzers: [ ] Yes [**X**] No* [ ] NA
   b. system adjusted: [ ] Automatic [**X**] Manual [ ] Other:

9. Applied dechlorination dose: **Two tubes filled. ~ 4-5 Tablets per day**

10. Chlorine residual in basin effluent: **The facility was not discharging at the time of inspection.**

11. Contact basins adequately baffled: [**X**] Yes [ ] No* [ ] NA

12. Adequate ventilation:
    a. cylinder storage area: [ ] Yes [ ] No* [**X**] NA
    b. equipment room: [ ] Yes [ ] No* [**X**] NA

13. Proper safety precautions used: [**X**] Yes [ ] No*

14. General condition: [**X**] Good [ ] Fair [ ] Poor

Comments:

UNIT PROCESS: Flow Measurement

[ ] Influent [ ] Intermediate [**X**] Effluent

1. Type measuring device: **ISCO 3010 Ultrasonic Flowmeter**
2. Present reading: **7.085 gpm**
3. Bypass channel: [ ] Yes [**X**] No
   Metered: [ ] Yes [**X**] No
4. Return flows discharged upstream from meter: [ ] Yes [**X**] No
   Identify:
5. Device operating properly: [**X**] Yes [ ] No*
6. Date of last calibration: **06/30/2008**
7. Evidence of following problems:
   a. obstructions [ ] Yes* [**X**] No
   b. grease [ ] Yes* [**X**] No
8. General condition: [**X**] Good [ ] Fair [ ] Poor

Comments:

- **Original O&M was dated December 12, 1997. An O&M update was hand delivered to DEQ staff during the inspection. The facility had recently installed a new effluent flow meter (ISCO Model 3010 Ultrasonic Flowmeter) and Chart Recorder (Honeywell DR4300, 10" Circular Chart Recorder) in June 2008.**

UNIT PROCESS: Post Aeration

1. Number of units: **1** In operation: **1**

2. Proper flow distribution between units: [ ] Yes [ ] No* [**X**] NA

3. Evidence of following problems:
   a. dead spots [ ] Yes* [**X**] No
   b. excessive foam [ ] Yes* [**X**] No
   c. poor aeration [ ] Yes* [**X**] No
   d. mechanical equipment failure [ ] Yes* [**X**] No [ ] NA

4. How is the aerator controlled? [ ] Time clock [ ] Manual [**X**] Continuous [ ] Other* [ ] NA

5. What is the current operating schedule? **Continuous**

6. Step weirs level: [ ] Yes [ ] No [**X**] NA

7. Effluent D.O. level: **The facility was not discharging at the time of inspection.**

8. General condition: [**X**] Good [ ] Fair [ ] Poor

Comments:

UNIT PROCESS: Effluent/Plant Outfall

1. Type Outfall [**X**] Shore based [ ] Submerged
2. Type if shore based: [ ] Wingwall [ ] Headwall [**X**] Rip Rap [ ] Direct Pipe
3. Flapper valve: [ ] Yes [**X**] No [ ] NA
4. Erosion of bank: [ ] Yes [**X**] No [ ] NA
5. Effluent plume visible? [ ] Yes* [**X**] No
6. Condition of outfall and supporting structures: [**X**] Good [ ] Fair [ ] Poor*
7. Final effluent, evidence of following problems:
   a. oil sheen [ ] Yes* [**X**] No
   b. grease [ ] Yes* [**X**] No
   c. sludge bar [ ] Yes* [**X**] No
   d. turbid effluent [ ] Yes* [**X**] No
   e. visible foam [ ] Yes* [**X**] No
   f. unusual color [ ] Yes* [**X**] No

Comments:

LABORATORY INSPECTION REPORT SUMMARY

FACILITY NAME: Camp Happyland	FACILITY NO: VA0074381	INSPECTION DATE: July 29, 2008
( ) Deficiencies	(X) No Deficiencies	

LABORATORY RECORDS

The Laboratory Records section had **No Deficiencies** noted during the inspection.

GENERAL SAMPLING AND ANALYSIS

The General Sampling and Analysis section had **No Deficiencies** noted during the inspection.

LABORATORY EQUIPMENT

The Laboratory Equipment section had **No Deficiencies** noted during the inspection.

INDIVIDUAL PARAMETERS

pH

The analysis for the parameter of pH had **No Deficiencies** noted during the inspection.

DO

The analysis for the parameter of Dissolved Oxygen (DO) had **No Deficiencies** noted during the inspection.

TRC

The analysis for the parameter of Total Residual Chlorine (TRC) had **No Deficiencies** noted during the inspection.

COMMENTS

The facility staff should check the DEQ website at http://www.deq.virginia.gov/vpdes/checklist.html and download the most recent inspection check sheets to keep up to date with changes in minimum laboratory requirements.

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
LABORATORY INSPECTION REPORT

10/01

FACILITY NO:	INSPECTION DATE:	PREVIOUS INSPECTION:	PREVIOUS EVALUATION:	TIME SPENT:
VA0074381	July 29, 2008	August 30, 2002	No Deficiencies	8 hours

NAME/ADDRESS OF FACILITY:	FACILITY CLASS:	FACILITY TYPE:	UNANNOUNCED INSPECTION?
Camp Happyland STP 21457 Happyland Drive Richardsville, VA 22736	( ) MAJOR (X) MINOR ( ) SMALL ( ) VPA/NDC	(X) MUNICIPAL ( ) INDUSTRIAL ( ) FEDERAL ( ) COMMERCIAL LAB	( ) YES (X) NO **FY-SCHEDULED INSPECTION?** (X) YES ( ) NO

INSPECTOR(S):	REVIEWERS:	PRESENT AT INSPECTION:
Wilamena Harback	Ed Stuart 08/22/2008	Rebecca Johnsen – Camp Happyland

LABORATORY EVALUATION	DEFICIENCIES? Yes	No
LABORATORY RECORDS		X
GENERAL SAMPLING & ANALYSIS		X
LABORATORY EQUIPMENT		X
DISSOLVED OXYGEN ANALYSIS PROCEDURES		X
pH ANALYSIS PROCEDURES		X
TOTAL RESIDUAL CHLORINE ANALYSIS PROCEDURES		X

QUALITY ASSURANCE/QUALITY CONTROL

Y/N	QUALITY ASSURANCE METHOD	PARAMETERS	FREQUENCY
Y	REPLICATE SAMPLES	TRC & pH	Each Run
N	SPIKED SAMPLES		
Y	STANDARD SAMPLES	TRC & pH	Daily
N	SPLIT SAMPLES		
Y	SAMPLE BLANKS	TRC	Each Run
N	OTHER		
N	EPA-DMR QA DATA?	RATING: ( ) No Deficiency ( ) Deficiency (X) NA	
N	QC SAMPLES PROVIDED?	RATING: ( ) No Deficiency ( ) Deficiency (X) NA	

FACILITY #: **VA0074381**

LABORATORY RECORDS SECTION

LABORATORY RECORDS INCLUDE THE FOLLOWING:

X	SAMPLING DATE	X	ANALYSIS DATE		CONT MONITORING CHART
X	SAMPLING TIME	X	ANALYSIS TIME	X	INSTRUMENT CALIBRATION
X	SAMPLE LOCATION	X	TEST METHOD	X	INSTRUMENT MAINTENANCE
					CERTIFICATE OF ANALYSIS

WRITTEN INSTRUCTIONS INCLUDE THE FOLLOWING:

X	SAMPLING SCHEDULES	X	CALCULATIONS	X	ANALYSIS PROCEDURES

	YES	NO	N/A
DO ALL ANALYSTS INITIAL THEIR WORK?	X		
DO BENCH SHEETS INCLUDE ALL INFORMATION NECESSARY TO DETERMINE RESULTS?	X		
IS THE DMR COMPLETE AND CORRECT? MONTH(S) REVIEWED: **May 2008**	X		
ARE ALL MONITORING VALUES REQUIRED BY THE PERMIT REPORTED?	X		

GENERAL SAMPLING AND ANALYSIS SECTION

	YES	NO	N/A
ARE SAMPLE LOCATION(S) ACCORDING TO PERMIT REQUIREMENTS?	X		
ARE SAMPLE COLLECTION PROCEDURES APPROPRIATE?	X		
IS SAMPLE EQUIPMENT CONDITION ADEQUATE?	X		
IS FLOW MEASUREMENT ACCORDING TO PERMIT REQUIREMENTS?	X		
ARE COMPOSITE SAMPLES REPRESENTATIVE OF FLOW?			X
ARE SAMPLE HOLDING TIMES AND PRESERVATION ADEQUATE?	X		
IF ANALYSIS IS PERFORMED AT ANOTHER LOCATION, ARE SHIPPING PROCEDURES ADEQUATE? LIST PARAMETERS AND NAME & ADDRESS OF LAB: **ESS Ltd. (TKN, TSS & BOD_5) – Culpeper, VA**	X		

LABORATORY EQUIPMENT SECTION

	YES	NO	N/A
IS LABORATORY EQUIPMENT IN PROPER OPERATING RANGE?	X		
ARE ANNUAL THERMOMETER CALIBRATION(S) ADEQUATE?	X		
IS THE LABORATORY GRADE WATER SUPPLY ADEQUATE?			X
ARE ANALYTICAL BALANCE(S) ADEQUATE?			X

ANALYST:	**Becky Johnsen**	VPDES NO	**VA0074381**

Parameter: Hydrogen Ion (pH)
Method: Electrometric
01/08

Meter: **HACH One pH Meter**

METHOD OF ANALYSIS

X	18th Edition of Standard Methods-4500-H-B
	21st or On-Line Edition of Standard Methods-4500-H-B (00)

	pH is a method defined analyte so modifications are not allowed. [40 CFR Part 136.6]	**Y**	**N**
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing the analysis? **NOTE:** Analyze 4 samples of known pH. May use external source of buffer (different lot/manufacturer than buffers used to calibrate meter). Recovery for each of the 4 samples must be ± 0.1 SU of the known concentration of the sample. [SM 1020 B.1] **Completed 10/25/2007**	X	
2)	Is the electrode in good condition (no chloride precipitate, etc.)? [2.b/c and 5.b]	X	
3)	Is electrode storage solution in accordance with manufacturer's instructions? [Mfr.]	X	
4)	Is meter calibrated on at least a daily basis using three buffers all of which are at the same temperature? [4.a] NOTE: Follow manufacturer's instructions.	X	
5)	After calibration, is a buffer analyzed as a check sample to verify that calibration is correct? Agreement should by within ± 0.1 SU. [4.a]	X	
6)	Do the buffer solutions appear to be free of contamination or growths? [3.1]	X	
7)	Are buffer solutions within their listed shelf life or have they been prepared within the last 4 weeks? [3.a] **Buffer made weekly from pillows**	X	
8)	Is the cap or sleeve covering the access hole on the reference electrode removed when measuring pH? [Mfr.]	X	
9)	For meters with ATC that also have temperature display, was the thermometer calibrated annually? [SM2550 B.1]	X	
10)	Is the temperature of buffer solutions and samples recorded when determining pH? [4.a]	X	
11)	Is sample analyzed within 15 minutes of collection? [40 CFR 136.6]	X	
12)	Was the electrode rinsed and then blotted dry between reading solutions (Disregard if a portion of the next sample analyzed is used as the rinse solution)? [4.a]	X	
13)	Is the sample stirred gently at a constant speed during measurement? [4.b]	X	
14)	Does the meter hold a steady reading after reaching equilibrium? [4.b]	X	
15)	Is a duplicate sample analyzed after every 20 samples if citing 18th or 19th Edition [1020 B.6] or daily for 20th or 21st Edition [Part 1020] Note: Not required for *in situ* samples.	X	
16)	Is pH of duplicate samples within 0.1 SU of the original sample? [Part 1020]	X	
17)	Is there a written procedure for which result will be reported on DMR (Sample or Duplicate) and is this procedure followed? [DEQ]	X	

COMMENTS:	• **The facility uses HACH for their pH buffers 4.0, (expires 04/2009), 7.0 and 10.0 buffers (expires 03/2009).** • **The facility does their standard check against a pH 7.0 buffer.** • **The annual NIST verification was performed on 12/06/2007.**
PROBLEMS:	**No problems discussed or observed.**

ANALYST:	**Becky Johnsen**	VPDES NO.	**VA0074381**

Parameter: Dissolved Oxygen
Method: Electrode
Facility Elevation - 300 ft
01/08

Meter: **YSI 55 Meter**

METHOD OF ANALYSIS:

X	18th Edition of Standard Methods-4500-O G
	21st or Online Editions of Standard Methods-4500-O G (01)

	DO is a method defined analyte so modifications are not allowed. [40 CFR Part 136.6]	**Y**	**N**
1)	If samples are collected, is collection carried out with a minimum of turbulence and air bubble formation and is the sample bottle allowed to overflow several times its volume? [B.3]	**In Situ**	
2)	Are meter and electrode operable and providing consistent readings? [3]	**X**	
3)	Is membrane in good condition without trapped air bubbles? [3.b]	**X**	
4)	Is correct filling solution used in electrode? [Mfr.]	**X**	
5)	Are water droplets shaken off the membrane prior to calibration? [Mfr.]	**X**	
6)	Is meter calibrated before use or at least daily? [Mfr.]	**X**	
7)	Is calibration procedure performed according to manufacturer's instructions? [Mfr.]	**X**	
8)	Is sample stirred during analysis? [Mfr.]	**In Situ**	
9)	Is the sample analysis procedure performed according to manufacturer's instructions? [Mfr.]	**X**	
10)	Is meter stabilized before reading D.O.? [Mfr.]	**X**	
11)	Is electrode stored according to manufacturer's instructions? [Mfr.]	**X**	
12)	Is a duplicate sample analyzed after every 20 samples if citing 18th or 19th Edition [1020 B.6] or daily if citing 20th or 21st Edition [Part 1020] Note: Not required for *in situ* samples.	**In Situ**	
13)	If a duplicate sample is analyzed, is the reported value for that sampling event, the average concentration of the sample and the duplicate? [DEQ]	**In Situ**	
14)	If a duplicate sample is analyzed, is the relative percent difference (RPD) < 20? [18th ed. Table 1020 I; 21st ed. DEQ]	**In Situ**	

COMMENTS:	• **The annual NIST verification was performed on 07/15/2008.**
PROBLEMS:	**No problems discussed or observed.**

ANALYST:	**Becky Johnsen**	VPDES NO	**VA0074381**

Parameter: Total Residual Chlorine
Method: DPD Colorimetric (HACH Pocket Colorimeter™)
01/08

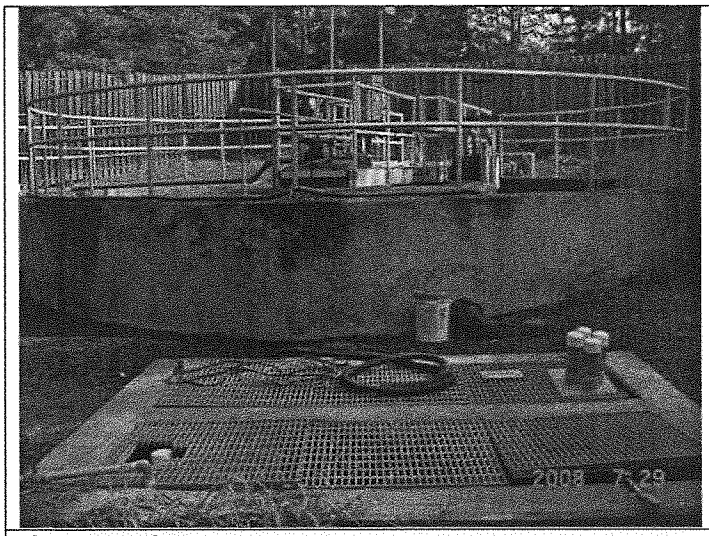
Instrument: **HACH Pocket Colorimeter**

METHOD OF ANALYSIS:

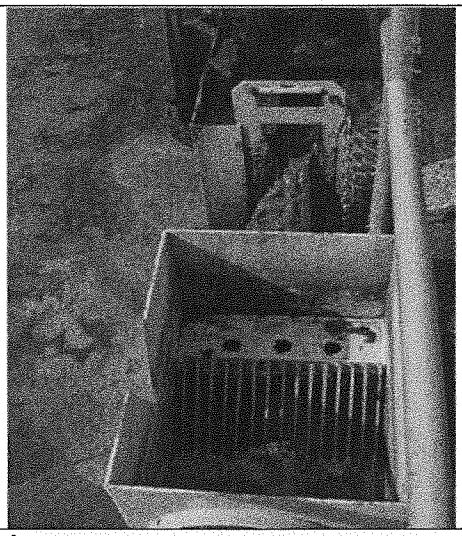
X	HACH Manufacturer's Instructions (Method 8167) plus an edition of Standard Methods
	18th Edition of Standard Methods 4500-Cl G
	21st Edition of Standard Methods 4500-Cl G (00)

		Y	N
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? NOTE: Analyze 4 samples of known TRC. Must use a lot number or source that is different from that used to prepare calibration standards. May not use Spec√ ™. [SM 1020 B.1] **Completed on 10/25/2007**	X	
2)	Are the DPD PermaChem® Powder Pillows stored in a cool, dry place? [Mfr.]	X	
3)	Are the pillows within the manufacturer's expiration date? [Mfr] **Expires March 2012**	X	
4)	Has buffering capability of DPD pillows been checked annually? (Pillows should adjust sample pH to between 6 and 7) [Mfr] **Completed on 03/21/2008**	X	
5)	When pH adjustment is required, is H_2SO_4 or NaOH used? [11.3.1]	X	
6)	Are cells clean and in good condition? [Mfr]	X	
7)	Is the low range (0.01-mg/L resolution) used for samples containing residuals from 0-2.00 mg/L? [Mfr.]	X	
8)	Is calibration curve developed (may use manufacturer's calibration) with daily verification using a high and a low standard? NOTE: May use manufacturer's installed calibration and commercially available chlorine standards for daily calibration verifications. [18th ed 1020 B.5; 21st ed 4020 B.2.b]	X	
9)	Is the 10-mL cell (2.5-cm diameter) used for samples from 0-2.00 mg/L? [Mfr.]	X	
10)	Is the meter zeroed correctly by using sample as blank for the cell used? [Mfr.]	X	
11)	Is the instrument cap placed correctly on the meter body when the meter is zeroed and when the sample is analyzed? [Mfr.]	X	
12)	Is the DPD Total Chlorine PermaChem® Powder Pillow mixed into the sample? [HACH 11.1]	X	
13)	Is the analysis made at least three minutes but not more than six minutes after PermaChem® Powder Pillow addition? [11.2]	X	
14)	If read-out is flashing [2.20], is sample diluted correctly, then reanalyzed? [1.2 & 2.0]	X	
15)	Are samples analyzed within 15 minutes of collection? [40 CFR Part 136]	X	
16)	Is a duplicate sample analyzed after every 20 samples if citing 18th Edition [SM 1020 B.6] or daily for 21st Edition [SM 4020 B.3.c]?	X	
17)	If duplicate sample is analyzed, is the relative percent difference (RPD) ≤ 20? [18th ed. Table 1020 I; 21st ed. DEQ]	X	

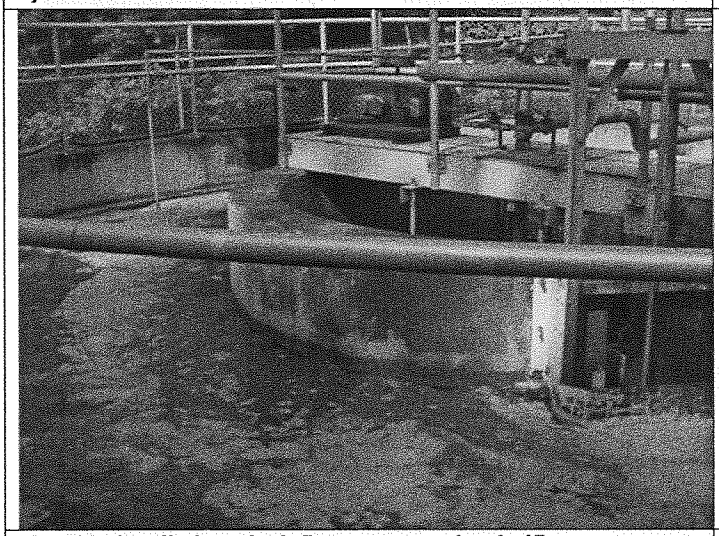
COMMENTS:	
PROBLEMS:	**No problems discussed or observed.**



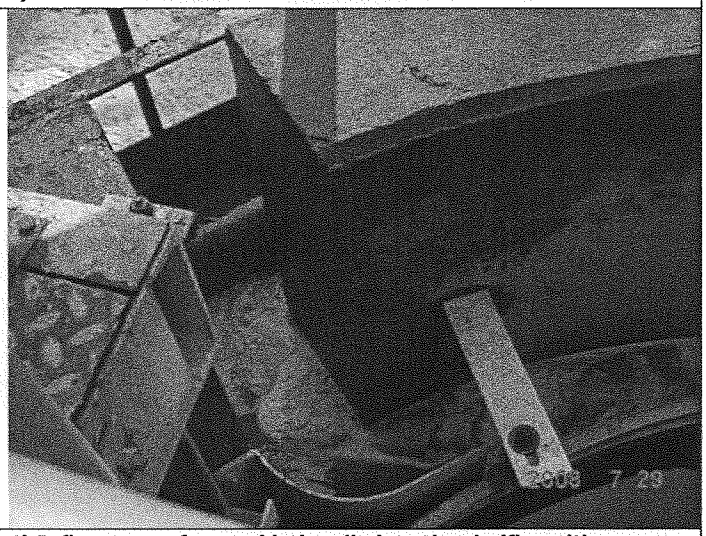
1) STP overview.



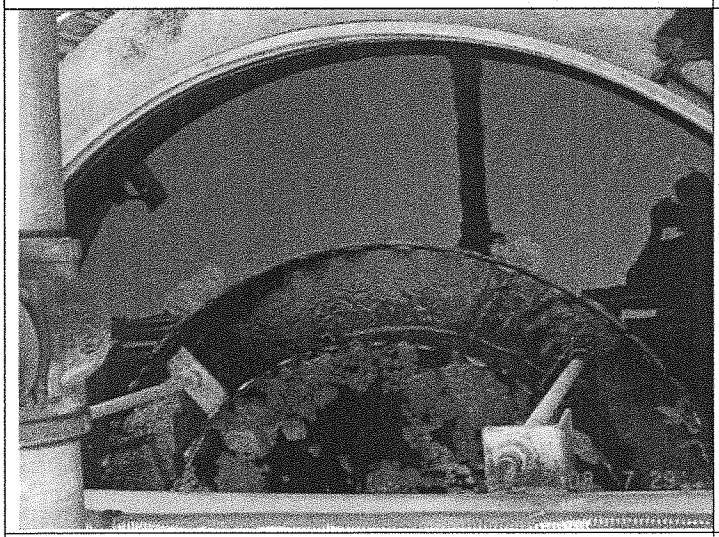
2) Influent bar screen



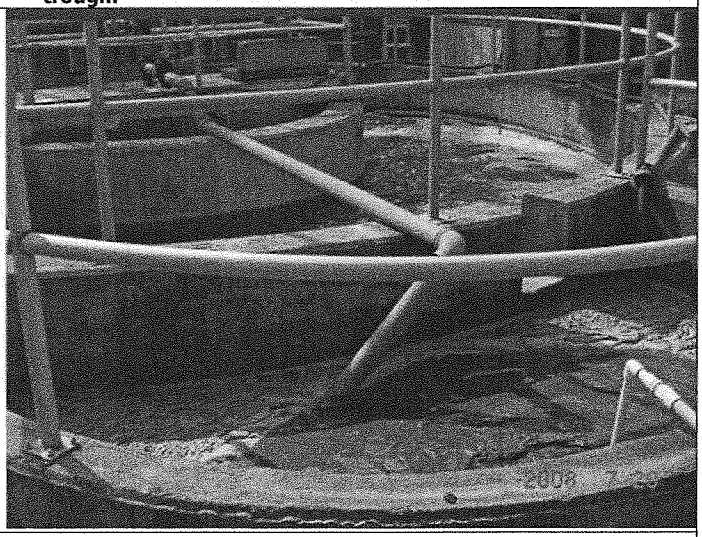
3) Oxidation ditch at the influent gate to the clarifier.



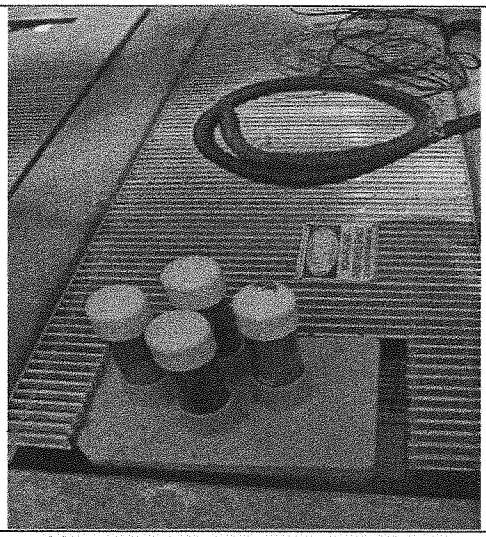
4) Influent gate from oxidation ditch to the clarifier with scum trough.



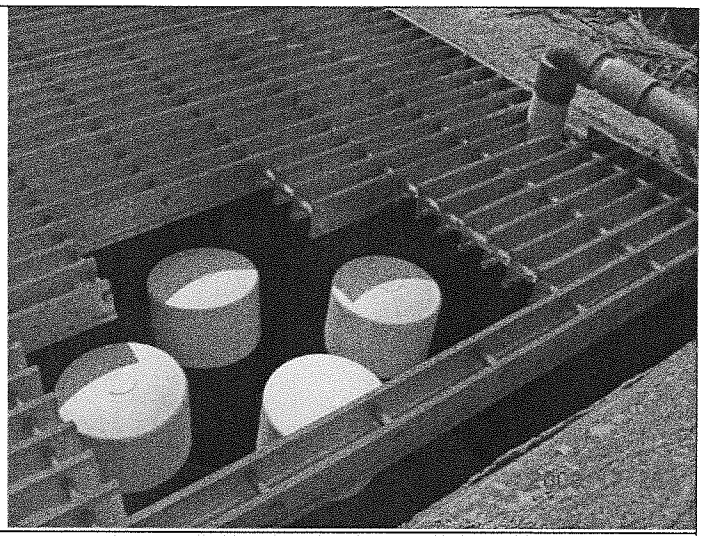
5) Clarifier with the weir in the center. Note rising solids.



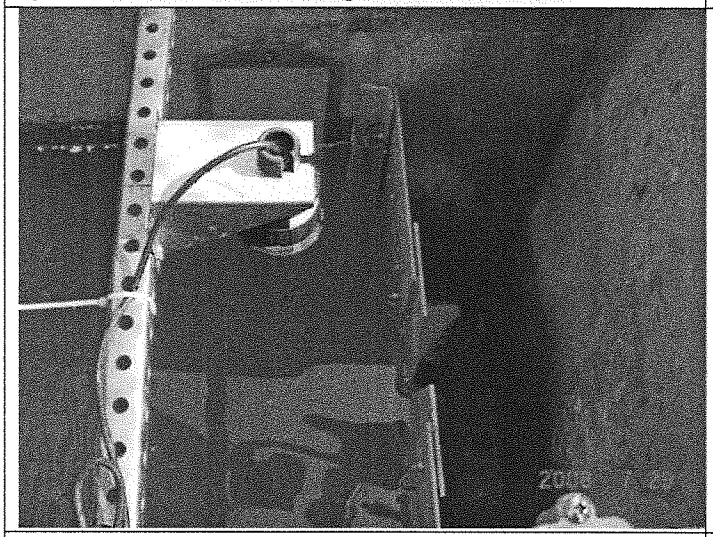
6) Aerobic digestion/Waste Holding Tank.



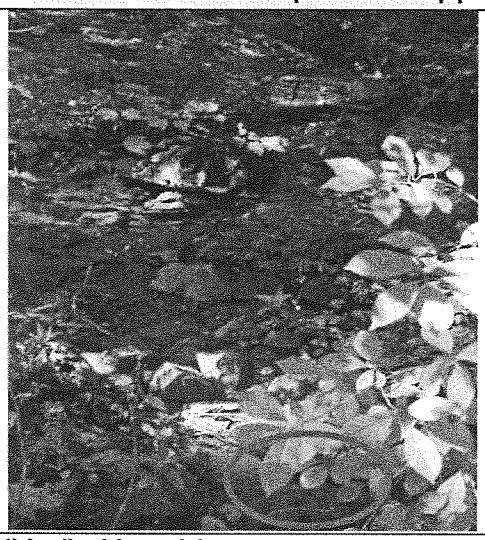
7) Chlorine tablet feeder looking toward contact tank.



8) De-chlorination tablet feeder with post aeration pipe.



9) New flow meter at V-notch prior to the outfall.



10) Outfall (red) with receiving stream

To:	Joan C. Crowther
From:	Katie Conaway
Date:	October 3, 2012
Subject:	Planning Statement for Camp Happyland WWTP
Permit Number:	VA0074381

Information for Outfall 001:
Discharge Type: Domestic
Discharge Flow: 0.026 MGD
Receiving Stream: Hazel Run, UT
Latitude / Longitude: 38°23'50"/ -77°42'44"
Rivermile: 0.37
Streamcode: XED
Waterbody: VAN-E18R
Water Quality Standards: Class III, Section 4.
Drainage Area: 0.51 mi^2

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

   The receiving stream is an Unnamed Tributary to Hazel Run (3-XED). There is no monitoring data for the receiving stream. The Unnamed Tributary to Hazel Run flows into Hazel Run. The nearest downstream DEQ water quality monitoring station is Station 3-HAE001.00, located on Hazel Run approximately 2.5 rivermiles downstream from Outfall 001. The following is the water quality summary for this segment of Hazel Run, as taken from the Draft 2012 Integrated Report*:

   Class III, Section 4.

   DEQ ambient water quality monitoring station 3-HAE001.00, at Route 610.

   E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. This impairment is nested within the downstream completed bacteria TMDL for the Rapidan River.

   The aquatic life use is considered fully supporting. The wildlife and fish consumption uses were not assessed.

**The Draft 2012 Integrated Report (IR) has been through the public comment period and reviewed by EPA. The 2012 IR is currently being finalized and prepared for release.*

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

No.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the Draft 2012 Integrated Report*							
Hazel Run	Recreation	*E. coli*	2.5 miles	No, but nested within the Rapidan River Bacteria TMDL (12/05/2007)	**4.52E+10 cfu/year**	Maximum Design Flow: **0.026 MGD** E. coli Geometric Mean Criterion: **126 cfu/100mL**	—

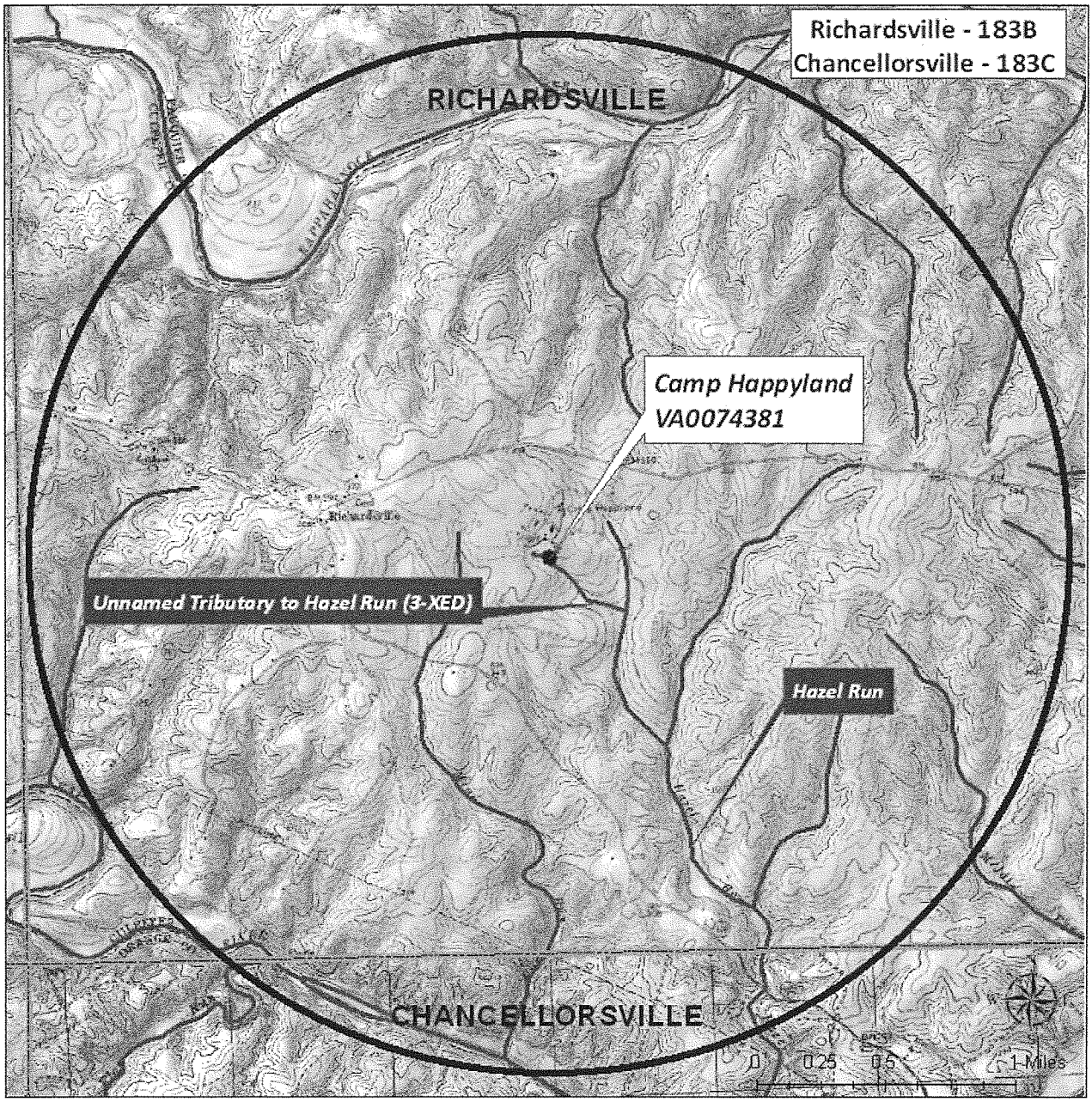
4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

   There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

   There is a drinking water intake on the Rapidan River that is located within a 5 mile radius of this facility; however, the intake is located upstream from where Hazel Run enters the Rapidan River.

6. See map below.


Richardsville - 183B
Chancellorsville - 183C
RICHARDSVILLE
Camp Happyland
VA0074381
Unnamed Tributary to Hazel Run (3-XED)
Hazel Run
CHANCELLORSVILLE
0
0.25
0.5
1 Miles

VA0074381 Camp Happyland (Jan. 2004 to July 2007)

Due	Outfall	ND	Rec'd	Par #	Param Desc	CONC MIN	Lim Min	CONC MAX	Lim Max	Ex
7/10/07	001	N	7/11/07	002	PH	7.30	6.0	7.63	9.0	0
6/10/07	001	N	6/11/07	002	PH	6.91	6.0	7.76	9.0	0
5/10/07	001	N	5/9/07	002	PH	7.10	6.0	7.30	9.0	0
4/10/07	001	N	4/10/07	002	PH	7.00	6.0	7.24	9.0	0
3/10/07	001	N	3/12/07	002	PH	7.00	6.0	7.17	9.0	0
2/10/07	001	N	2/12/07	002	PH	7.00	6.0	7.25	9.0	0
1/10/07	001	N	1/11/07	002	PH	7.03	6.0	7.22	9.0	0
12/10/06	001	N	12/11/06	002	PH	7.06	6.0	7.22	9.0	0
11/10/06	001	N	11/13/06	002	PH	7.06	6.0	7.21	9.0	0
10/10/06	001	N	10/11/06	002	PH	7.09	6.0	7.23	9.0	0
9/10/06	001	N	9/11/06	002	PH	7.11	6.0	7.36	9.0	0
8/10/06	001	N	8/11/06	002	PH	7.09	6.0	7.80	9.0	0
7/10/06	001	N	7/11/06	002	PH	7.06	6.0	7.39	9.0	0
6/10/06	001	N	6/9/06	002	PH	7.13	6.0	7.31	9.0	0
5/10/06	001	N	5/11/06	002	PH	7.13	6.0	7.30	9.0	0
4/10/06	001	N	4/11/06	002	PH	7.06	6.0	7.26	9.0	0
3/10/06	001	N	3/10/06	002	PH	7.06	6.0	7.27	9.0	0
2/10/06	001	N	2/13/06	002	PH	7.08	6.0	7.23	9.0	0
1/10/06	001	N	1/10/06	002	PH	7.06	6.0	7.24	9.0	0
12/10/05	001	N	12/9/05	002	PH	7.12	6.0	7.27	9.0	0
11/10/05	001	N	11/10/05	002	PH	7.04	6.0	7.23	9.0	0
10/10/05	001	N	10/11/05	002	PH	7.09	6.0	7.28	9.0	
9/10/05	001	N	9/12/05	002	PH	7.12	6.0	7.30	9.0	
8/10/05	001	N	8/11/05	002	PH	7.21	6.0	7.41	9.0	0
7/10/05	001	N	7/11/05	002	PH	7.13	6.0	7.39	9.0	
6/10/05	001	N	6/13/05	002	PH	7.07	6.0	7.26	9.0	
5/10/05	001	N	5/11/05	002	PH	7.05	6.0	7.29	9.0	
4/10/05	001	N	4/11/05	002	PH	7.06	6.0	7.31	9.0	0
3/10/05	001	N	3/11/05	002	PH	7.00	6.0	7.27	9.0	0
2/10/05	001	N	2/10/05	002	PH	7.02	6.0	7.28	9.0	0
1/10/05	001	N	1/10/05	002	PH	7.06	6.0	7.29	9.0	0
12/10/04	001	N	12/10/04	002	PH	7.13	6.0	7.31	9.0	0
11/10/04	001	N	11/9/04	002	PH	6.99	6.0	7.28	9.0	0
10/10/04	001	N	10/12/04	002	PH	7.10	6.0	7.27	9.0	0
9/10/04	001	N	9/13/04	002	PH	7.00	6.0	7.27	9.0	0
8/10/04	001	N	8/11/04	002	PH	7.29	6.0	7.58	9.0	0
7/10/04	001	N	7/9/04	002	PH	7.46	6.0	7.73	9.0	0
6/10/04	001	N	6/10/04	002	PH	7.49	6.0	7.83	9.0	0
5/10/04	001	N	5/11/04	002	PH	7.48	6.0	7.82	9.0	0
4/10/04	001	N	4/12/04	002	PH	7.20	6.0	7.67	9.0	0
3/10/04	001	N	3/10/04	002	PH	7.16	6.0	7.41	9.0	0
2/10/04	001	N	2/12/04	002	PH	7.10	6.0	7.52	9.0	0
1/10/04	001	N	1/12/04	002	PH	7.19	6.0	7.55	9.0	0

Ranked pH Values	
7.83	
7.82	
7.80	
7.76	90th percentile
7.73	
7.67	
7.63	
7.58	
7.55	
7.52	
7.41	
7.41	
7.39	
7.39	
7.36	
7.31	
7.31	
7.31	
7.30	
7.30	
7.30	
7.29	
7.29	
7.28	
7.28	
7.28	
7.27	
7.27	
7.27	
7.27	
7.27	
7.26	
7.26	
7.25	
7.24	
7.24	
7.23	
7.23	
7.23	
7.22	
7.22	10th percentile
7.21	
7.17	

Attachment 5

Camp Happyland STP
VA0074381

Temperature & pH Data
January 1999 to April 2002

	Temp (oC)	pH (S.U.)
Jan-99	12.6	7.2
Feb-99	12.9	7.2
Mar-99	11.6	7.6
Apr-99	15.9	7.4
May-99	22.5	7.5
Jun-99	27.2	6.9
Jul-99	28.7	6.9
Aug-99	28.7	6.9
Sep-99	25.6	6.8
Oct-99	19.0	7.7
Nov-99	17.0	7.3
Dec-99	13.0	7.2
Jan-00	10.8	7.1
Feb-00	13.0	7.2
Mar-00	15.6	8.2
Apr-00	17.7	7.5
May-00	21.0	7.4
Jun-00	26.5	7.8
Jul-00	26.4	7.1
Aug-00	29.2	7.0
Sep-00	25.8	7.2
Oct-00	18.5	7.2
Nov-00	14.0	6.9
Dec-00	7.1	6.8
Jan-01	6.9	7.0
Feb-01	9.2	6.9
Mar-01	9.9	7.2
Apr-01		
May-01	21.9	7.1
Jun-01	24.1	6.8
Jul-01	25.1	7.7
Aug-01	25.7	6.9
Sep-01	22.6	6.9
Oct-01	16.8	7.2
Nov-01	15.4	7.2
Dec-01	11.7	7.4
Jan-02	9.1	7.3
Feb-02		
Mar-02	11.8	7.2
Apr-02		
Mean	18.1	7.2
Count	37.0	37.0
90th	26.5	7.6

Ranked Values

Temp (oC)	pH (S.U.)	
29.2	8.2	
28.7	7.8	
28.7	7.7	
27.2	7.7	
26.5	7.6	90th percentile
26.4	7.5	
25.8	7.5	
25.7	7.4	
25.6	7.4	
25.1	7.4	
24.1	7.3	
22.6	7.3	
22.5	7.2	
21.9	7.2	
21.0	7.2	
19.0	7.2	
18.5	7.2	
17.7	7.2	
17.0	7.2	
16.8	7.2	
15.9	7.2	
15.6	7.2	
15.4	7.1	
14.0	7.1	
13.0	7.1	
13.0	7.0	
12.9	7.0	
12.6	6.9	
11.8	6.9	
11.7	6.9	
11.6	6.9	
10.8	6.9	
9.9	6.9	
9.2	6.9	
9.1	6.8	
7.1	6.8	
6.9	6.8	

Attachment 6

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Camp Happyland Permit No.: VA0074381

Receiving Stream: Hazel River, UT Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =		mg/L
90% Temperature (Annual) =		deg C
90% Temperature (Wet season) =		deg C
90% Maximum pH =		SU
10% Maximum pH =		SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	0	MGD
7Q10 (Annual) =	0	MGD
30Q10 (Annual) =	0	MGD
1Q10 (Wet season) =	0	MGD
30Q10 (Wet season)	0	MGD
30Q5 =	0	MGD
Harmonic Mean =	0	MGD
Annual Average =	0	MGD

Mixing Information

Annual - 1Q10 Mix =	0	%
- 7Q10 Mix =	0	%
- 30Q10 Mix =	0	%
Wet Season - 1Q10 Mix =	0	%
- 30Q10 Mix =	0	%

Effluent Information

Mean Hardness (as CaCO3) =	189	mg/L
90% Temp (Annual) =	26.5	deg C
90% Temp (Wet season) =		deg C
90% Maximum pH =	7.76	SU
10% Maximum pH =	7.22	SU
Discharge Flow =	0.026	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	--	--	na	2.7E+03
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
Acrylonitrile [C]	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	--	--	na	6.6E+00
Aldrin [C]	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	--	--	--	--	--	--	--	--	3.0E+00	--	na	1.4E-03
Ammonia-N (mg/l) (Yearly)	0	1.30E+01	1.54E+00	na	--	1.3E+01	1.5E+00	na	--	--	--	--	--	--	--	--	--	1.3E+01	1.5E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1.30E+01	3.34E+00	na	--	1.3E+01	3.3E+00	na	--	--	--	--	--	--	--	--	--	1.3E+01	3.3E+00	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	--	--	na	7.1E+02
Benzidine [C]	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	--	--	na	5.4E-03
Benzo (a) anthracene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (b) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (k) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (a) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Bis2-Chloroethyl Ether	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na	1.7E+05
Bromoform [C]	0	--	--	na	3.6E+03	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
Cadmium	0	8.0E+00	1.9E+00	na	--	8.0E+00	1.9E+00	na	--	--	--	--	--	--	--	--	--	8.0E+00	1.9E+00	na	--
Carbon Tetrachloride [C]	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	2.2E-02
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Chloroform [C]	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	9.6E+02	1.2E+02	na	--	9.6E+02	1.2E+02	na	--	--	--	--	--	--	--	--	--	9.6E+02	1.2E+02	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Copper	0	2.4E+01	1.5E+01	na	--	2.4E+01	1.5E+01	na	--	--	--	--	--	--	--	--	--	2.4E+01	1.5E+01	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	2.2E+05
DDD [C]	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na	8.4E-03
DDE [C]	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na	5.9E-03
DDT [C]	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	5.9E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Dichloromethane (Methylene Chloride) [C]	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
3,3-Dichlorobenzidine[C]	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na	7.7E-01
Dichlorobromomethane [C]	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na	4.6E+02
1,2-Dichloroethane [C]	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na	7.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	3.9E+02
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
Dieldrin [C]	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	1.4E-03
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Di-2-Ethylhexyl Phthalate [C]	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na	5.9E+01
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na	2.3E+03
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	2.9E+06
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+02	--	--	--	--	--	--	--	--	--	--	na	7.7E+02
2,4-Dinitrotoluene [C]	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na	9.1E+01
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine[C]	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na	5.4E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	8.1E-01
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	8.1E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [c]	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	2.1E-03
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	1.1E-03
Hexachlorobenzene[c]	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	--	--	na	7.7E-03
Hexachlorobutadiene[c]	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	--	--	na	5.0E+02
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	--	--	na	1.3E-01
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	--	--	na	4.6E-01
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	--	--	--	--	9.5E-01	--	na	6.3E-01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
Hexachloroethane[c]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [c]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone[c]	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	2.6E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	2.7E+02	3.0E+01	na	--	2.7E+02	3.0E+01	na	--	--	--	--	--	--	--	--	--	2.7E+02	3.0E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	na	5.1E-02
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Nickel	0	3.1E+02	3.5E+01	na	4.6E+03	3.1E+02	3.5E+01	na	4.6E+03	--	--	--	--	--	--	--	--	3.1E+02	3.5E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
N-Nitrosodimethylamine[c]	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	--	--	na	8.1E+01
N-Nitrosodiphenylamine[c]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodi-n-propylamine[c]	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB Total[c]	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	--	--	na	1.7E-03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol [C]	0	1.1E+01	8.3E+00	na	8.2E+01	1.1E+01	8.3E+00	na	8.2E+01	--	--	--	--	--	--	--	--	**1.1E+01**	**8.3E+00**	**na**	**8.2E+01**
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	--	--	--	**na**	**4.6E+06**
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	**na**	**1.1E+04**
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	**na**	--
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	--	--	--	**na**	**1.5E+01**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	**na**	**4.0E+00**
Strontium-90	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	**na**	**8.0E+00**
Tritium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	**na**	**2.0E+04**
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**1.1E+04**
Silver	0	1.0E+01	--	na	--	1.0E+01	--	na	--	--	--	--	--	--	--	--	--	**1.0E+01**	--	**na**	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	**na**	--
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	--	--	--	**na**	**1.1E+02**
Tetrachloroethylene[C]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	**na**	**8.9E+01**
Thallium	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	--	--	--	**na**	**6.3E+00**
Toluene	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	**na**	**2.0E+05**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	**na**	--
Toxaphene [C]	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**7.5E-03**
Tributyltin	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**6.3E-02**	**na**	--
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	--	--	--	**na**	**9.4E+02**
1,1,2-Trichloroethane[C]	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	**na**	**4.2E+02**
Trichloroethylene [C]	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	--	--	--	**na**	**8.1E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	--	--	--	**na**	**6.5E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	**na**	--
Vinyl Chloride[C]	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	--	--	--	**na**	**6.1E+01**
Zinc	0	2.0E+02	2.0E+02	na	6.9E+04	2.0E+02	2.0E+02	na	6.9E+04	--	--	--	--	--	--	--	--	**2.0E+02**	**2.0E+02**	**na**	**6.9E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	1.1E+00
Chromium III	7.5E+01
Chromium VI	6.4E+00
Copper	9.3E+00
Iron	na
Lead	1.8E+01
Manganese	na
Mercury	5.1E-02
Nickel	2.1E+01
Selenium	3.0E+00
Silver	4.1E+00
Zinc	8.0E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

VaFWIS - Department of Game and Inland Fisheries

38,23,50.0 -77,42,44.0
is the Search Point

Submit Cancel

Search Point

- **Change** to "clicked" map point
- **Fixed** at 38,23,50.0 - 77,42,44.0

Display **Search Point** is not in center at map center

Show Position Rings

Yes No

1 mile and 1/4 mile at the **Search Point**

Show Search Area

Yes No

2 Search distance miles radius

Search Point is at map center

Base Map Choices

Topography

Map Overlay Choices

Current List: Position, Search

Map Overlay Legend

Position Rings 1 mile and 1/4 mile at the Search Point

2 mile radius Search Area

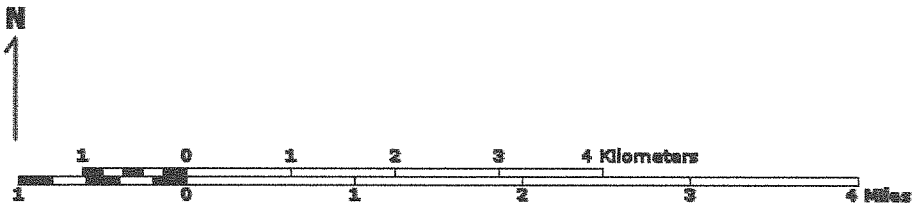
Refresh Browser Page

Map Click Pan

Map Scale In Zoom Out

Screen Size Small Size Big

Help



Point of Search 38,23,50.0 -77,42,44.0

Map Location 38,23,50.0 -77,42,44.0

Select **Coordinate System:**

- Degrees,Minutes,Seconds Latitude - Longitude
- Decimal Degrees Latitude - Longitude
- Meters UTM NAD83 East North Zone
- Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 258346 and top 4258173. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West.Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5 square miles.

Attachment 7

	Topographic maps and Black and white aerial photography for year 1990+- are from the United States Department of the Interior, United States Geological Survey. Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network. Shaded topographic maps are from TOPO! ©2006 National Geographic http://www.national.geographic.com/topo All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries. map assembled 2012-10-26 16:05:41 (qa/qc June 12, 2012 14:14 - tn=433038 dist=3218 I)

VaFWIS Initial Project Assessment Report Compiled on 10/26/2012, 4:08:00 PM

Help

Known or likely to occur within a **2 mile radius around point 38,23,50.0 -77,42,44.0** in **047 Culpeper County, 061 Fauquier County, 137 Orange County, VA**

View Map of Site Location

442 Known or Likely Species ordered by Status Concern for Conservation (displaying first 20) (19 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
060003	FESE	II	Wedgemussel, dwarf	Alasmidonta heterodon		BOVA
040129	ST	I	Sandpiper, upland	Bartramia longicauda		BOVA
040293	ST	I	Shrike, loggerhead	Lanius ludovicianus		BOVA
040379	ST	I	Sparrow, Henslow's	Ammodramus henslowii		BOVA
040093	FSST	II	Eagle, bald	Haliaeetus leucocephalus		BOVA
060081	ST	II	Floater, green	Lasmigona subviridis	Yes	TEWaters,Habitat
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100248	FS	I	Fritillary, regal	Speyeria idalia idalia		BOVA
060029	FS	III	Lance, yellow	Elliptio lanceolata		BOVA
030063	CC	III	Turtle, spotted	Clemmys guttata		BOVA
030012	CC	IV	Rattlesnake, timber	Crotalus horridus		BOVA
010077		I	Shiner, bridle	Notropis bifrenatus		BOVA
040225		I	Sapsucker, yellow-bellied	Sphyrapicus varius		BOVA
040319		I	Warbler, black-throated green	Dendroica virens		BOVA
040306		I	Warbler, golden-winged	Vermivora chrysoptera		BOVA
040052		II	Duck, American black	Anas rubripes		BOVA
040105		II	Rail, king	Rallus elegans		BOVA
040320		II	Warbler, cerulean	Dendroica cerulea		BOVA
040266		II	Wren, winter	Troglodytes troglodytes		BOVA
030068		III	Turtle, eastern box	Terrapene carolina carolina		BOVA

To view **All 442 species** View 442

* FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; CC=Collection Concern

** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Bat Colonies or Hibernacula: **Not Known**

Stream ID	Stream Name	Reach Status	Anadromous Fish Species	View Map

Anadromous Fish Use Streams (2 records)

View Map of All Anadromous Fish Use Streams

			Different Species	Highest TE*	Highest Tier**	
P183	Rappanannock river 3	Potential	0			Yes
P186	Rapidan river	Potential	0			Yes

Impediments to Fish Passage

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters (1 Reach)

View Map of All Threatened and Endangered Waters

Stream Name	T&E Waters Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Rappahannock River (02080103)	ST	060081	ST	II	Floater, green	Lasmigona subviridis	Yes

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species (1 Reach)

View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

Stream Name	Tier Species		View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name	

Rappahannock River (20801031)	ST	060081	ST	II	Floater, green	Lasmigona subviridis	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Public Holdings: (1 names)

Name	Agency	Level
C.F. Phelps Wildlife Management Area	Va DGIF	

Compiled on 10/26/2012, 4:08:00 PM I433038.0 report=IPA searchType= R dist= 3218 poi= 38,23,50.0 -77,42,44.0

PixelSize=64; Anadromous=0.03643; BECAR=0.037533; Bats=0.026878; Buffer=0.178165; County=0.147788; Impediments=0.02393; Init=0.213989; PublicLands=0.043779; SppObs=0.543089; TEWaters=0.066914; TierReaches=0.080594; TierTerrestrial=0.084867; Total=1.352197; Trout=0.044735

Temperature & pH data (Jan 94 - June 97)

Camp HappyLand pH/Temp Data (VA0074381)

Date	Temp (°C)	Point	Sample	Rank	Percent	pH (s.u.)	Point	Sample	Rank	Percent
Jan 2, 94	2.3	174	28.5	1	100.00%	8.5	279	8.8	1	99.64%
3	2.0	187	28.8	2	99.88%	7.9	290	8.8	1	99.64%
4	3.5	185	28	3	99.40%	7.9	291	8.8	1	99.64%
5	3.0	420	28	3	99.40%	7.9	788	8.8	1	99.64%
6	2.0	829	28	3	99.40%	7.9	254	8.7	5	99.04%
7	4.0	830	28	3	99.40%	8.1	255	8.7	5	99.04%
8	4.1	175	27.1	7	99.28%	8.4	280	8.7	5	99.04%
10	2.0	180	27	8	98.33%	7.6	295	8.7	5	99.04%
11	2.0	401	27	8	98.33%	7.8	844	8.7	5	99.04%
12	3.0	403	27	8	98.33%	8.1	117	8.6	10	97.13%
13	3.0	407	27	8	98.33%	8.3	123	8.6	10	97.13%
14	3.0	408	27	8	98.33%	8.3	130	8.6	10	97.13%
25	0.0	409	27	8	98.33%	7.7	131	8.6	10	97.13%
26	1.9	410	27	8	98.33%	7.8	260	8.6	10	97.13%
27	0.0	592	27	8	98.33%	7.6	271	8.6	10	97.13%
28	0.0	167	26.8	16	98.21%	8.1	272	8.6	10	97.13%
29	2.0	173	26.3	17	97.97%	7.7	278	8.6	10	97.13%
30	3.0	607	26.3	17	97.97%	7.1	283	8.6	10	97.13%
31	1.0	168	26	19	94.82%	7.6	284	8.6	10	97.13%
Feb 1, 94	1.0	179	26	19	94.82%	7.8	287	8.6	10	97.13%
2	1.0	182	26	19	94.82%	7.6	289	8.6	10	97.13%
3	0.0	186	26	19	94.82%	7.8	294	8.6	10	97.13%
4	1.0	189	26	19	94.82%	7.6	295	8.6	10	97.13%
6	4.0	191	26	19	94.82%	7.5	297	8.6	10	97.13%
7	3.0	196	26	19	94.82%	7.7	802	8.6	10	97.13%
8	3.0	198	26	19	94.82%	7.8	1	8.5	26	95.22%
9	3.0	199	26	19	94.82%	8.2	80	8.5	26	95.22%
10	2.0	201	26	19	94.82%	8	81	8.5	26	95.22%
12	0.0	208	26	19	94.82%	7.7	92	8.5	26	95.22%
14	0.0	209	26	19	94.82%	7.7	93	8.5	26	95.22%
15	1.0	389	26	19	94.82%	7.9	95	8.5	26	95.22%
16	2.0	399	26	19	94.82%	8	98	8.5	26	95.22%
17	2.0	400	26	19	94.82%	8.2	110	8.5	26	95.22%
18	3.0	402	26	19	94.82%	8	142	8.5	26	95.22%
19	4.0	405	26	19	94.82%	7.9	270	8.5	26	95.22%
20	5.0	406	26	19	94.82%	7.9	273	8.5	26	95.22%
21	7.0	415	26	19	94.82%	7.4	298	8.5	26	95.22%
22	6.0	416	26	19	94.82%	7.2	310	8.5	26	95.22%
23	6.0	417	26	19	94.82%	7.9	353	8.5	26	95.22%
24	6.0	419	26	19	94.82%	8	801	8.5	26	95.22%
25	6.0	547	26	19	94.82%	8.2	821	8.5	26	95.22%
26	5.0	552	26	19	94.82%	8.4	7	8.4	42	92.11%
28	4.0	555	26	19	94.82%	8.2	42	8.4	42	92.11%
Mar 1, 94	4.0	593	26	19	94.82%	8.1	59	8.4	42	92.11%
2	5.0	833	26	19	94.82%	8.1	64	8.4	42	92.11%
3	2.4	836	26	19	94.82%	8.3	73	8.4	42	92.11%
4	3.0	172	25.8	47	94.26%	8	78	8.4	42	92.11%
5	5.0	190	25.8	47	94.26%	8	79	8.4	42	92.11%
6	7.0	613	25.8	47	94.26%	8.1	87	8.4	42	92.11%
7	7.0	160	25.5	50	94.14%	8.2	92	8.4	42	92.11%
8	9.0	150	25.4	51	94.02%	8.2	109	8.4	42	92.11%
9	8.0	579	25.3	52	93.90%	8.2	119	8.4	42	92.11%
10	7.0	134	25	53	88.16%	8.2	122	8.4	42	92.11%
11	7.8	149	25	53	88.16%	8.1	246	8.4	42	92.11%
12	7.0	151	25	53	88.16%	8	253	8.4	42	92.11%
13	7.0	163	25	53	88.16%	7.6	262	8.4	42	92.11%
14	8.0	164	25	53	88.16%	7.8	275	8.4	42	92.11%
15	8.0	165	25	53	88.16%	8.2	292	8.4	42	92.11%
16	7.0	166	25	53	88.16%	8.4	308	8.4	42	92.11%
17	6.0	170	25	53	88.16%	8.3	311	8.4	42	92.11%
18	7.0	171	25	53	88.16%	8.2	342	8.4	42	92.11%
19	7.0	179	25	53	88.16%	8.2	515	8.4	42	92.11%
20	8.0	181	25	53	88.16%	7.9	616	8.4	42	92.11%
21	8.0	183	25	53	88.16%	8.4	641	8.4	42	92.11%
22	9.0	184	25	53	88.16%	8.1	684	8.4	42	92.11%
23	11.0	188	25	53	88.16%	7.9	685	8.4	42	92.11%
24	12.0	192	25	53	88.16%	8.3	694	8.4	42	92.11%
25	12.0	195	25	53	88.16%	8.3	11	8.3	68	87.32%
26	11.7	197	25	53	88.16%	7.7	12	8.3	68	87.32%
27	9.0	200	25	53	88.16%	7.7	46	8.3	68	87.32%
28	9.0	210	25	53	88.16%	8.2	60	8.3	68	87.32%
29	8.6	212	25	53	88.16%	7.7	67	8.3	68	87.32%
30	8.0	368	25	53	88.16%	8.4	69	8.3	68	87.32%
31	9.0	391	25	53	88.16%	8.3	74	8.3	68	87.32%
Apr 1, 94	11.0	392	25	53	88.16%	8.3	75	8.3	68	87.32%
2	15.7	396	25	53	88.16%	7.7	85	8.3	68	87.32%
3	16.0	397	25	53	88.16%	7.6	86	8.3	68	87.32%
4	11.0	399	25	53	88.16%	8.4	89	8.3	68	87.32%
5	10.0	404	25	53	88.16%	8.4	90	8.3	68	87.32%
6	13.0	411	25	53	88.16%	8.5	101	8.3	68	87.32%
7	13.0	418	25	53	88.16%	8.5	102	8.3	68	87.32%
8	11.0	544	25	53	88.16%	8.5	144	8.3	68	87.32%
9	11.0	546	25	53	88.16%	7.8	247	8.3	68	87.32%
10	12.0	563	25	53	88.16%	7.8	250	8.3	68	87.32%
11	13.0	558	25	53	88.16%	8.3	258	8.3	68	87.32%
12	12.0	559	25	53	88.16%	8.3	288	8.3	68	87.32%
13	13.0	571	25	53	88.16%	8.4	302	8.3	68	87.32%
14	14.8	574	25	53	88.16%	8.1	306	8.3	68	87.32%
15	15.8	575	25	53	88.16%	8.3	317	8.3	68	87.32%
16	17.8	581	25	53	88.16%	8.3	328	8.3	68	87.32%
17	17.9	586	25	53	88.16%	8.1	334	8.3	68	87.32%
18	14.4	588	25	53	88.16%	8.4	385	8.3	68	87.32%
19	15.7	587	25	53	88.16%	8.5	388	8.3	68	87.32%
20	18.0	602	25	53	88.16%	8.2	429	8.3	68	87.32%
21	14.4	605	25	53	88.16%	8.5	430	8.3	68	87.32%
22	14.0	608	25	53	88.16%	8.5	449	8.3	68	87.32%
23	15.1	828	25	53	88.16%	8.2	457	8.3	68	87.32%
24	17.0	831	25	53	88.16%	8.2	525	8.3	68	87.32%
25	15.8	832	25	53	88.16%	8	582	8.3	68	87.32%
26	15.9	834	25	53	88.16%	8.2	632	8.3	68	87.32%
27	18.0	622	24.8	101	88.04%	8.3	633	8.3	68	87.32%
28	16.8	581	24.8	102	87.92%	8.3	652	8.3	68	87.32%
29	20.3	153	24.7	103	87.80%	8.1	707	8.3	68	87.32%
30	21.0	169	24.6	104	87.68%	8.1	736	8.3	68	87.32%
May 1, 94	22.0	159	24.5	105	87.08%	8.1	770	8.3	68	87.32%
2	16.8	178	24.5	105	87.08%	8.4	790	8.3	68	87.32%
3	14.8	193	24.5	105	87.08%	8.2	800	8.3	68	87.32%
4	15.0	207	24.5	105	87.08%	8.2	27	8.2	108	77.27%
5	14.0	610	24.5	105	87.08%	8.2	33	8.2	108	77.27%
6	14.8	177	24.4	110	86.96%	8.5	41	8.2	108	77.27%
7	14.9	580	24.3	111	86.84%	8.1	43	8.2	108	77.27%
8	12.4	152	24	112	81.46%	8	50	8.2	108	77.27%
9	14.5	154	24	112	81.46%	8.2	51	8.2	108	77.27%
10	15.6	184	24	112	81.46%	8.1	52	8.2	108	77.27%
11	13.5	202	24	112	81.46%	8.2	53	8.2	108	77.27%
12	15.0	211	24	112	81.46%	8.2	58	8.2	108	77.27%
13	17.0	214	24	112	81.46%	8.6	61	8.2	108	77.27%
14	18.0	215	24	112	81.46%	8	62	8.2	108	77.27%
15	19.0	218	24	112	81.46%	8.4	71	8.2	108	77.27%
16	19.4	223	24	112	81.46%	7	94	8.2	108	77.27%
17	18.7	224	24	112	81.46%	8.1	97	8.2	108	77.27%
18	15.4	225	24	112	81.46%	8.4	98	8.2	108	77.27%
19	15.0	349	24	112	81.46%	8.6	100	8.2	108	77.27%
20	14.7	355	24	112	81.46%	8.1	107	8.2	108	77.27%
21	17.4	370	24	112	81.46%	8.1	108	8.2	108	77.27%
22	19.2	371	24	112	81.46%	7.9	109	8.2	108	77.27%
23	18.5	380	24	112	81.46%	7.8	113	8.2	108	77.27%
24	21.0	382	24	112	81.46%	7.6	115	8.2	108	77.27%
25	20.0	387	24	112	81.46%	7.9	118	8.2	108	77.27%
26	19.0	388	24	112	81.46%	8.6	138	8.2	108	77.27%
27	18.5	393	24	112	81.46%	8.6	140	8.2	108	77.27%
28	19.0	394	24	112	81.46%	7.6	153	8.2	108	77.27%
29	20.0	395	24	112	81.46%	7.7	232	8.2	108	77.27%
30	25.0	414	24	112	81.46%	7.5	759	8.2	108	77.27%
31	20.0	426	24	112	81.46%	7.3	282	8.2	108	77.27%
Jun 1, 94	20.2	430	24	112	81.46%	7.9	285	8.2	108	77.27%
2	20.4	545	24	112	81.46%	7.7	301	8.2	108	77.27%
3	19.8	548	24	112	81.46%	8.2	305	8.2	108	77.27%
4	20.3	549	24	112	81.46%	7.2	309	8.2	108	77.27%
5	20.0	551	24	112	81.46%	8.2	368	8.2	108	77.27%
6	20.6	554	24	112	81.46%	8	379	8.2	108	77.27%
7	22.0	565	24	112	81.46%	8.5	385	8.2	108	77.27%
8	23.0	568	24	112	81.46%	8	398	8.2	108	77.27%
9	20.7	567	24	112	81.46%	8.3	412	8.2	108	77.27%
10	20.0	572	24	112	81.46%	7.8	415	8.2	108	77.27%
11	20.7	573	24	112	81.46%	8.1	419	8.2	108	77.27%
12	22.0	577	24	112	81.46%	7.8	420	8.2	108	77.27%
13	22.0	582	24	112	81.46%	8	425	8.2	108	77.27%
14	26.0	585	24	112	81.46%	8.1	427	8.2	108	77.27%
15	25.4	588	24	112	81.46%	7.9	439	8.2	108	77.27%
16	25.0	587	24	112	81.46%	7.8	440	8.2	108	77.27%
17	24.0	589	24	112	81.46%	7.8	450	8.2	108	77.27%
18	24.7	589	24	112	81.46%	8.2	517	8.2	108	77.27%
19	24.0	608	24	112	81.46%	8	518	8.2	108	77.27%
20	22.0	618	24	112	81.46%	7.8	519	8.2	108	77.27%
21	23.0	835	24	112	81.46%	8	521	8.2	108	77.27%
22	22.7	182	23.9	157	81.22%	7.9	808	8.2	108	77.27%
23	23.7	834	23.9	157	81.22%	7.9	818	8.2	108	77.27%
24	24.5	158	23.7	159	80.74%	7.9	835	8.2	108	77.27%
25	25.5	540	23.7	159	80.74%	8.1	839	8.2	108	77.27%
26	19.4	541	23.7	159	80.74%	7.9	845	8.2	108	77.27%
27	23.9	623	23.7	159	80.74%	8.1	854	8.2	108	77.27%
28	25.0	576	23.5	163	80.50%	7.6	855	8.2	108	77.27%
29	25.0	837	23.5	163	80.50%	7.5	856	8.2	108	77.27%
30	25.0	208	23.4	165	80.38%	8	858	8.2	108	77.27%
Jul 1, 94	25.0	542	23.2	166	80.26%	8	859	8.2	108	77.27%
2	26.8	617	23.1	167	80.14%	7.8	861	8.2	108	77.27%
3	26.0	143	23	168	75.00%	7.8	865	8.2	108	77.27%
4	24.8	156	23	168	75.00%	7.6	876	8.2	108	77.27%
5	25.0	203	23	168	75.00%	7.6	878	8.2	108	77.27%
6	25.0	213	23	168	75.00%	7.9	889	8.2	108	77.27%
7	25.8	216	23	168	75.00%	7.8	891	8.2	108	77.27%
8	26.3	217	23	168	75.00%	7.8	892	8.2	108	77.27%
9	29.5	219	23	168	75.00%	7.8	895	8.2	108	77.27%
10	27.1	221	23	168	75.00%	7.5	697	8.2	108	77.27%
11	24.5	222	23	168	75.00%	7.8	701	8.2	108	77.27%
12	24.4	231	23	168	75.00%	7.5	709	8.2	108	77.27%
13	25.0	240	23	168	75.00%	8	711	8.2	108	77.27%
14	28.0	248	23	168	75.00%	7.8	714	8.2	108	77.27%
15	27.0	369	23	168	75.00%	7.5	725	8.2	108	77.27%
16	25.0	367	23	168	75.00%	7.4	728	8.2	108	77.27%
17	26.0	368	23	168	75.00%	7.4	751	8.2	108	77.27%
18	25.0	375	23	168	75.00%	8.1	754	8.2	108	77.27%
19	25.0	378	23	168	75.00%	7.6	767	8.2	108	77.27%
20	26.0	379	23	168	75.00%	8	780	8.2	108	77.27%
21	26.0	378	23	168	75.00%	7.6	782	8.2	108	77.27%
22	26.6	381	23	168	75.00%	7.9	784	8.2	108	77.27%
23	25.0	385	23	168	75.00%	7.3	787	8.2	108	77.27%
24	26.0	386	23	168	75.00%	7.3	797	8.2	108	77.27%
25	25.8	412	23	168	75.00%	7.8	799	8.2	108	77.27%
26	26.0	413	23	168	75.00%	7.6	810	8.2	108	77.27%
27	25.0	421	23	168	75.00%	7.5	8	8.1	192	63.88%
28	24.5	422	23	168	75.00%	7.5	10	8.1	192	63.88%
29	24.0	424	23	168	75.00%	7.6	16	8.1	192	63.88%
30	25.0	425	23	168	75.00%	7.2	44	8.1	192	63.88%
31	26.0	427	23	168	75.00%	7.1	45	8.1	192	63.88%
Aug 1, 94	25.0	438	23	168	75.00%	7.7	48	8.1	192	63.88%
2	26.0	543	23	168	75.00%	7.6	54	8.1	192	63.88%
3	26.0	550	23	168	75.00%	7.5	85	8.1	192	63.88%
4	25.0	556	23	168	75.00%	7.4	88	8.1	192	63.88%
5	26.0	557	23	168	75.00%	7.8	91	8.1	192	63.88%
6	24.0	563	23	168	75.00%	7.5	103	8.1	192	63.88%
7	23.0	570	23	168	75.00%	7.6	104	8.1	192	63.88%
8	22.0	578	23	168	75.00%	7.4	105	8.1	192	63.88%
9	21.7	584	23	168	75.00%	7.7	111	8.1	192	63.88%
10	23.4	590	23	168	75.00%	7.8	114	8.1	192	63.88%
11	24.5	594	23	168	75.00%	7.7	121	8.1	192	63.88%
12	26.0	823	23	168	75.00%	7.5	124	8.1	192	63.88%
13	26.0	824	23	168	75.00%	7.4	125	8.1	192	63.88%
14	25.0	826	23	168	75.00%	7.4	146	8.1	192	63.88%
15	24.0	816	22.9	211	74.88%	7.8	149	8.1	192	63.88%
16	25.0	157	22.7	212	74.76%	7.8	180	8.1	192	63.88%
17	23.0	226	22.6	213	74.64%	7.7	182	8.1	192	63.88%
18	24.0	229	22.5	214	74.52%	7.5	183	8.1	192	63.88%
19	24.0	228	22.3	215	74.28%	7.6	227	8.1	192	63.88%
20	23.0	614	22.3	215	74.28%	7.5	233	8.1	192	63.88%
21	23.0	825	22.2	217	74.16%	7.5	234	8.1	192	63.88%
22	24.0	105	22	218	70.10%	7.8	235	8.1	192	63.88%
23	23.0	142	22	218	70.10%	7.6	238	8.1	192	63.88%
24	20.0	147	22	218	70.10%	7.7	308	8.1	192	63.88%
25	23.0	148	22	218	70.10%	7.7	316	8.1	192	63.88%
26	23.0	155	22	218	70.10%	7.7	341	8.1	192	63.88%
27	24.0	204	22	218	70.10%	7.8	355	8.1	192	63.88%
28	24.0	230	22	218	70.10%	7.6	356	8.1	192	63.88%
29	24.0	349	22	218	70.10%	7.6	357	8.1	192	63.88%
30	22.8	350	22	218	70.10%	7.5	381	8.1	192	63.88%
31	21.6	351	22	218	70.10%	8.1	384	8.1	192	63.88%
Sep 1, 94	22.3	358	22	218	70.10%	7.7	376	8.1	192	63.88%
2	22.5	362	22	218	70.10%	8	377	8.1	192	63.88%
3	22.0	364	22	218	70.10%	7.7	378	8.1	192	63.88%
4	23.0	366	22	218	70.10%	7.5	383	8.1	192	63.88%
5	19.0	372	22	218	70.10%	8.2	389	8.1	192	63.88%
6	18.0	373	22	218	70.10%	8.1	391	8.1	192	63.88%
7	18.0	374	22	218	70.10%	8.1	394	8.1	192	63.88%
8	18.0	377	22	218	70.10%	8.1	395	8.1	192	63.88%
9	20.0	383	22	218	70.10%	8.1	403	8.1	192	63.88%
10	21.0	384	22	218	70.10%	7.9	404	8.1	192	63.88%
12	17.0	390	22	218	70.10%	7.9	409	8.1	192	63.88%
13	19.8	423	22	218	70.10%	7.8	410	8.1	192	63.88%
17	23.0	428	22	218	70.10%	7.7	413	8.1	192	63.88%
22	18.0	431	22	218	70.10%	7.4	416	8.1	192	63.88%
24	21.0	531	22	218	70.10%	7.5	421	8.1	192	63.88%
25	20.0	566	22	218	70.10%	7.6	424	8.1	192	63.88%
26	21.0	568	22	218	70.10%	7.9	431	8.1	192	63.88%
27	20.0	569	22	218	70.10%	7.9	432	8.1	192	63.88%
Oct 1, 94	23.0	598	22	218	70.10%	8.4	435	8.1	192	63.88%
5	15.0	801	22	218	70.10%	8.3	442	8.1	192	63.88%
10	15.0	803	22	218	70.10%	7.6	501	8.1	192	63.88%
17	13.0	804	22	218	70.10%	7.8	504	8.1	192	63.88%
20	13.0	825	22	218	70.10%	8.3	535	8.1	192	63.88%
21	13.0	827	22	218	70.10%	8	601	8.1	192	63.88%
23	16.7	611	21.9	252	69.98%	7.6	602	8.1	192	63.88%
24	14.0	205	21.7	253	69.86%	8.4	613	8.1	192	63.88%
25	14.0	820	21.6	254	69.74%	8.7	617	8.1	192	63.88%
28	13.0	600	21.5	255	69.50%	8.7	631	8.1	192	63.88%
29	14.0	612	21.5	255	69.50%	7.1	636	8.1	192	63.88%
30	14.0	615	21.4	257	69.26%	7	642	8.1	192	63.88%
31	14.0	829	21.4	257	69.26%	8.3	648	8.1	192	63.88%
Nov 1, 94	17.0	810	21.3	259	69.14%	8.2	649	8.1	192	63.88%
5	13.0	819	21.2	260	69.02%	8.8	650	8.1	192	63.88%
7	13.0	821	21.1	261	68.78%	7	651	8.1	192	63.88%
8	12.0	817	21.1	261	68.78%	8.4	653	8.1	192	63.88%
10	13.0	104	21	263	66.75%	7	657	8.1	192	63.88%
16	12.0	128	21	263	66.75%	8.5	660	8.1	192	63.88%
17	11.0	227	21	263	66.75%	6.6	663	8.1	192	63.88%
18	13.0	237	21	263	66.75%	7	669	8.1	192	63.88%
19	12.7	242	21	263	66.75%	8.7	670	8.1	192	63.88%
20	12.2	244	21	263	66.75%	7	671	8.1	192	63.88%
21	11.0	352	21	263	66.75%	8.2	672	8.1	192	63.88%
22	11.0	383	21	263	66.75%	8.5	677	8.1	192	63.88%
28	8.0	437	21	263	66.75%	8.6	681	8.1	192	63.88%
Dec 1, 94	7	528	21	263	66.75%	8.6	682	8.1	192	63.88%
5	9.0	530	21	263	66.75%	8.5	698	8.1	192	63.88%
11	9.0	538	21	263	66.75%	7.2	700	8.1	192	63.88%
14	6.0	562	21	263	66.75%	8.4	702	8.1	192	63.88%
17	8.0	564	21	263	66.75%	7.1	704	8.1	192	63.88%
18	8.0	569	21	263	66.75%	7.2	706	8.1	192	63.88%
19	6.0	609	21	263	66.75%	8.6	710	8.1	192	63.88%
21	6.0	618	21	263	66.75%	8.8	712	8.1	192	63.88%
22	7.0	816	20.8	280	66.63%	8.7	713	8.1	192	63.88%
24	8.0	144	20.7	281	66.27%	7.2	717	8.1	192	63.88%
25	9.0	148	20.7	281	66.27%	7.1	719	8.1	192	63.88%
27	5.0	629	20.7	281	66.27%	8.8	720	8.1	192	63.88%
28	4.0	141	20.6	284	66.15%	8.6	722	8.1	192	63.88%
29	4.0	137	20.4	285	66.03%	8.2	729	8.1	192	63.88%
31	5.0	103	20.3	286	65.79%	7.3	734	8.1	192	63.88%
Jan 2, 95	6.0	139	20.3	286	65.79%	8.6	736	8.1	192	63.88%
3	3.0	136	20.2	288	65.67%	8.3	737	8.1	192	63.88%
4	3.0	129	20	289	63.29%	8.6	739	8.1	192	63.88%
5	1.0	133	20	289	63.29%	8.8	746	8.1	192	63.88%
6	1.0	135	20	289	63.29%	8.8	748	8.1	192	63.88%
7	2.0	140	20	289	63.29%	8.4	752	8.1	192	63.88%
8	6.0	145	20	289	63.29%	7.4	760	8.1	192	63.88%
9	3.0	220	20	289	63.29%	8.8	779	8.1	192	63.88%
10	3.0	236	20	289	63.29%	8.7	789	8.1	192	63.88%

837 Positions x .90
= 753 up or
85 down
= 25°C and
8.3 S.U.

Attachment 8

11	4.0	243	20	289	83.28%	8.8	783	8.1	192	83.88%
12	8.0	245	20	289	83.28%	8.6	794	8.1	192	83.88%
13	7.0	353	20	289	83.28%	8.5	799	8.1	192	83.88%
14	10.0	358	20	289	83.28%	7.7	804	8.1	192	83.88%
15	12.0	360	20	289	83.28%	7.4	805	8.1	192	83.88%
16	12.0	438	20	289	83.28%	8.2	807	8.1	192	83.88%
17	10.0	441	20	289	83.28%	8.3	815	8.1	192	83.88%
18	9.0	583	20	289	83.28%	8	819	8.1	192	83.88%
19	8.0	811	20	289	83.28%	8.3	28	8	304	52.15%
20	9.0	812	20	289	83.28%	8.2	32	8	304	52.15%
21	8.0	813	20	289	83.28%	8.1	34	8	304	52.15%
22	7.0	814	20	289	83.28%	7.5	40	8	304	52.15%
23	4.0	822	20	289	83.28%	8.4	47	8	304	52.15%
Feb 1, 95	4.0	832	19.9	309	83.18%	8.2	48	8	304	52.15%
16	1.0	139	19.8	310	82.92%	8.5	56	8	304	52.15%
17	2.0	239	19.6	310	82.87%	8.4	99	8	304	52.15%
18	5.0	631	19.5	312	82.80%	7.8	112	8	304	52.15%
19	4.0	120	19.4	313	82.68%	7.7	118	8	304	52.15%
25	5.0	835	19.3	314	82.58%	7.9	141	8	304	52.15%
26	8.0	126	19.2	315	82.44%	8	143	8	304	52.15%
28	9.0	119	19	316	81.00%	8.1	148	8	304	52.15%
Mar 1, 95	9.0	130	19	318	81.00%	8.3	154	8	304	52.15%
4	7.0	132	19	318	81.00%	7.9	156	8	304	52.15%
5	7.0	232	19	318	81.00%	8	185	8	304	52.15%
9	8.0	233	19	318	81.00%	7.1	180	8	304	52.15%
10	5.0	234	19	318	81.00%	8	179	8	304	52.15%
11	12.0	347	19	318	81.00%	7.5	185	8	304	52.15%
12	8.0	357	19	318	81.00%	7.8	229	8	304	52.15%
18	9.0	381	19	318	81.00%	7.5	251	8	304	52.15%
19	9.0	434	19	318	81.00%	7.7	303	8	304	52.15%
25	9.0	439	19	318	81.00%	7.5	315	8	304	52.15%
26	13.0	581	19	318	81.00%	7.1	319	8	304	52.15%
3	8.0	302	18.8	328	80.77%	8.3	321	8	304	52.15%
22	16.0	827	18.8	329	80.77%	7.7	331	8	304	52.15%
23	14.0	121	18.7	330	80.53%	7.2	332	8	304	52.15%
24	14.0	539	18.7	330	80.53%	8	337	8	304	52.15%
25	14.0	127	18.5	332	80.29%	8	338	8	304	52.15%
30	14.0	131	18.5	332	80.29%	7.3	340	8	304	52.15%
Apr 3, 95	6.0	181	18.4	334	80.05%	8.3	343	8	304	52.15%
22	18.0	630	18.4	334	80.05%	7.7	354	8	304	52.15%
23	14.0	94	18	338	58.37%	7.2	358	8	304	52.15%
24	14.0	101	18	338	58.37%	8	362	8	304	52.15%
25	14.0	235	18	338	58.37%	8	369	8	304	52.15%
30	14.0	241	18	338	58.37%	7.3	375	8	304	52.15%
May 1, 95	14.0	345	18	338	58.37%	8	386	8	304	52.15%
2	13.0	350	18	338	58.37%	8.1	387	8	304	52.15%
3	12.0	435	18	338	58.37%	8.4	392	8	304	52.15%
11	17.0	442	18	338	58.37%	8	408	8	304	52.15%
13	14.0	520	18	338	58.37%	7.4	414	8	304	52.15%
14	18.0	521	18	338	58.37%	7.1	417	8	304	52.15%
15	17.0	537	18	338	58.37%	7.7	418	8	304	52.15%
19	18.0	828	18	338	58.37%	7.9	422	8	304	52.15%
20	22.0	815	18	338	58.37%	7.4	426	8	304	52.15%
21	24.0	821	18	338	58.37%	7.2	429	8	304	52.15%
23	22.0	98	17.9	350	58.25%	7.8	436	8	304	52.15%
27	22.0	91	17.8	351	58.13%	7	437	8	304	52.15%
28	21.0	643	17.7	352	58.01%	7.4	438	8	304	52.15%
29	20.0	833	17.5	353	57.89%	8.5	441	8	304	52.15%
Jun 1, 95	17.0	125	17.4	354	57.78%	8	451	8	304	52.15%
11	24.0	807	17.2	355	57.66%	8.1	456	8	304	52.15%
12	22.0	98	17	356	55.62%	8.1	465	8	304	52.15%
13	19.0	137	17	356	55.62%	8.1	516	8	304	52.15%
14	18.0	238	17	356	55.62%	8	603	8	304	52.15%
15	20.0	259	17	356	55.62%	7.9	822	8	304	52.15%
16	20.0	343	17	356	55.62%	7.9	823	8	304	52.15%
17	19.0	346	17	356	55.62%	8.1	824	8	304	52.15%
18	22.0	354	17	356	55.62%	8	825	8	304	52.15%
19	21.0	433	17	356	55.62%	7.9	827	8	304	52.15%
20	22.0	518	17	356	55.62%	8.1	829	8	304	52.15%
21	22.0	522	17	356	55.62%	8.3	834	8	304	52.15%
22	23.0	528	17	356	55.62%	8.2	846	8	304	52.15%
23	23.0	533	17	356	55.62%	7.8	847	8	304	52.15%
24	23.0	534	17	356	55.62%	7.8	862	8	304	52.15%
25	25.0	536	17	356	55.62%	8	866	8	304	52.15%
26	24.0	806	17	356	55.62%	7.9	868	8	304	52.15%
27	24.0	819	17	356	55.62%	7.9	873	8	304	52.15%
28	22.0	820	17	356	55.62%	7.9	875	8	304	52.15%
29	22.0	106	16.8	373	55.50%	7.9	879	8	304	52.15%
30	22.0	252	16.7	374	55.38%	7.9	887	8	304	52.15%
Jul 1, 95	23.0	77	16	375	54.55%	8	889	8	304	52.15%
2	23.0	118	16	375	54.55%	8.1	893	8	304	52.15%
3	22.0	329	16	375	54.55%	8.1	898	8	304	52.15%
4	23.0	335	16	375	54.55%	8.1	899	8	304	52.15%
5	23.0	523	16	375	54.55%	8.2	703	8	304	52.15%
6	24.0	525	16	375	54.55%	7.8	706	8	304	52.15%
7	23.0	634	16	375	54.55%	7.8	709	8	304	52.15%
8	24.0	100	15.9	382	54.43%	7.9	715	8	304	52.15%
9	22.0	99	15.8	383	53.95%	8.1	718	8	304	52.15%
10	22.0	116	15.8	383	53.95%	7.8	721	8	304	52.15%
11	23.0	842	15.8	383	53.95%	8.2	725	8	304	52.15%
12	23.0	790	15.8	383	53.95%	8	727	8	304	52.15%
13	24.0	78	15.7	387	53.47%	8	729	8	304	52.15%
14	24.0	93	15.7	387	53.47%	8.2	733	8	304	52.15%
15	26.0	650	15.7	387	53.47%	8.1	735	8	304	52.15%
16	22.0	838	15.7	387	53.47%	7.8	740	8	304	52.15%
17	25.0	89	15.6	391	53.11%	8.1	747	8	304	52.15%
18	25.0	114	15.6	391	53.11%	8	753	8	304	52.15%
19	24.0	805	15.6	391	53.11%	7.9	767	8	304	52.15%
20	24.0	848	15.5	394	52.87%	8.1	783	8	304	52.15%
21	24.0	788	15.5	394	52.87%	8.1	771	8	304	52.15%
22	25.0	122	15.4	398	52.51%	8.3	772	8	304	52.15%
23	25.0	851	15.4	398	52.51%	7.8	778	8	304	52.15%
24	25.0	853	15.4	398	52.51%	7.6	803	8	304	52.15%
25	26.0	655	15.3	398	52.39%	7.7	808	8	304	52.15%
26	26.0	97	15.1	400	52.27%	7.8	808	8	304	52.15%
27	27.0	108	15	401	50.84%	7.8	809	8	304	52.15%
28	26.0	123	15	401	50.84%	7.8	2	7.9	402	41.39%
29	27.0	247	15	401	50.84%	8.1	3	7.9	402	41.39%
30	25.0	248	15	401	50.84%	8.1	4	7.9	402	41.39%
Aug 1, 95	26.0	432	15	401	50.84%	7.6	5	7.9	402	41.39%
2	26.0	443	15	401	50.84%	8	31	7.9	402	41.39%
3	27.0	447	15	401	50.84%	7.7	35	7.9	402	41.39%
4	27.0	450	15	401	50.84%	7.9	36	7.9	402	41.39%
5	27.0	524	15	401	50.84%	8.1	38	7.9	402	41.39%
6	27.0	527	15	401	50.84%	8.1	63	7.9	402	41.39%
7	25.0	532	15	401	50.84%	7.8	66	7.9	402	41.39%
10	23.0	808	15	401	50.84%	8.2	128	7.9	402	41.39%
11	23.0	111	14.9	413	50.80%	8.1	129	7.9	402	41.39%
12	24.0	886	14.9	413	50.60%	8	150	7.9	402	41.39%
13	26.0	68.0	14.9	415.0	50.48%	8.2	155	7.9	402	41.39%
14	26.0	124.0	14.7	416.0	50.24%	8.1	157	7.9	402	41.39%
15	26.0	852.0	14.7	418.0	50.24%	8.0	158	7.9	402	41.39%
16	25.0	107.0	14.6	418.0	50.00%	8.0	159	7.9	402	41.39%
19	26.0	110.0	14.6	418.0	50.00%	8.2	161	7.9	402	41.39%
20	26.0	113.0	14.5	420.0	49.40%	8.2	167	7.9	402	41.39%
22	23.0	644.0	14.5	420.0	49.40%	8.1	171	7.9	402	41.39%
28	23.0	847.0	14.5	420.0	49.40%	8.0	187	7.9	402	41.39%
29	22.0	794.0	14.5	420.0	49.40%	7.9	737	7.9	402	41.39%
30	23.0	809.0	14.5	420.0	49.40%	8.1	738	7.9	402	41.39%
31	23.0	92.0	14.4	425.0	48.80%	8.2	244	7.9	402	41.39%
Sep 1, 95	24.0	95	14.4	425	48.80%	8	245	7.9	402	41.39%
2	23.0	849	14.4	425	48.80%	8.2	314	7.9	402	41.39%
3	2.0	856	14.4	425	48.80%	8	318	7.9	402	41.39%
7	22.0	801	14.4	425	48.80%	8.3	347	7.9	402	41.39%
9	24.0	98	14	430	45.45%	8.3	359	7.9	402	41.39%
14	22.0	109	14	430	45.45%	8.1	380	7.9	402	41.39%
29	15.0	253	14	430	45.45%	8.1	383	7.9	402	41.39%
30	17.0	254	14	430	45.45%	7.7	387	7.9	402	41.39%
Oct 1, 95	19.0	256	14	430	45.45%	7.7	370	7.9	402	41.39%
2	18.0	257	14	430	45.45%	8.1	371	7.9	402	41.39%
4	20.0	258	14	430	45.45%	8	372	7.9	402	41.39%
5	21.0	330	14	430	45.45%	8	373	7.9	402	41.39%
7	23.0	331	14	430	45.45%	8	374	7.9	402	41.39%
8	19.0	332	14	430	45.45%	8.2	387	7.9	402	41.39%
13	14.0	333	14	430	45.45%	8.2	393	7.9	402	41.39%
14	20.0	335	14	430	45.45%	8	397	7.9	402	41.39%
15	18.0	337	14	430	45.45%	8.1	408	7.9	402	41.39%
21	15.0	338	14	430	45.45%	7.9	423	7.9	402	41.39%
22	13.0	339	14	430	45.45%	7.9	443	7.9	402	41.39%
23	12.5	340	14	430	45.45%	7.9	444	7.9	402	41.39%
24	13.5	344	14	430	45.45%	7.9	445	7.9	402	41.39%
28	15.0	440	14	430	45.45%	7.8	446	7.8	402	41.39%
29	14.0	449	14	430	45.45%	7.9	447	7.9	402	41.39%
Nov 1, 95	13.0	451	14	430	45.45%	8.3	448	7.9	402	41.39%
2	15.0	516	14	430	45.45%	8.2	458	7.9	402	41.39%
4	14.0	517	14	430	45.45%	8	502	7.9	402	41.39%
6	13.0	518	14	430	45.45%	7.6	505	7.9	402	41.39%
7	12.0	526	14	430	45.45%	7.6	508	7.9	402	41.39%
8	12.0	638	14	430	45.45%	7.5	513	7.9	402	41.39%
9	10.0	840	14	430	45.45%	7.6	560	7.9	402	41.39%
12	10.0	841	14	430	45.45%	8	583	7.9	402	41.39%
14	9.8	781	14	430	45.45%	8.3	605	7.9	402	41.39%
16	10.5	795	13.9	458	45.33%	7.9	606	7.9	402	41.39%
18	7.0	837	13.8	459	45.22%	7.8	610	7.8	402	41.39%
19	7.0	845	13.7	460	44.98%	7.8	611	7.9	402	41.39%
25	7.0	850	13.7	460	44.98%	7.7	612	7.9	402	41.39%
29	8.0	115	13.5	462	44.74%	7.8	619	7.9	402	41.39%
30	7.0	449	13.5	462	44.74%	7.7	620	7.9	402	41.39%
Dec 1, 95	9.0	802	13.4	484	44.62%	7.7	621	7.9	402	41.39%
3	8.0	861	13.2	485	44.50%	8	626	7.9	402	41.39%
4	10.0	846	13.1	486	44.38%	7.8	628	7.9	402	41.39%
7	8.0	80	13	487	41.63%	7.7	630	7.9	402	41.39%
8	5.0	81	13	487	41.63%	7.8	664	7.9	402	41.39%
14	4.0	85	13	487	41.63%	7.8	667	7.9	402	41.39%
16	8.0	87	13	487	41.63%	7.5	880	7.9	402	41.39%
17	8.0	249	13	487	41.63%	7.6	715	7.9	402	41.39%
18	8.0	250	13	487	41.63%	7.7	732	7.9	403	41.39%
19	6.0	251	13	487	41.63%	7.5	730	7.9	402	41.39%
20	6.0	255	13	487	41.63%	7.5	741	7.9	402	41.39%
21	5.0	260	13	487	41.63%	7.6	742	7.9	402	41.39%
Jan 2, 96	5.0	261	13	487	41.63%	7.5	743	7.8	402	41.39%
3	4.0	263	13	487	41.63%	7.6	744	7.8	402	41.39%
15	4.0	266	13	487	41.63%	7.3	748	7.9	402	41.39%
16	2.5	327	13	487	41.63%	7.5	750	7.9	402	41.39%
17	5.0	341	13	487	41.63%	7.5	751	7.9	402	41.39%
18	6.0	444	13	487	41.63%	7.5	786	7.8	402	41.39%
19	5.0	449	13	487	41.63%	7.4	788	7.9	402	41.39%
20	5.0	452	13	487	41.63%	7.7	773	7.9	402	41.39%
21	6.0	515	13	487	41.63%	7.5	777	7.8	402	41.39%
24	5.0	535	13	487	41.63%	7.6	778	7.8	402	41.39%
25	5.0	857	13	487	41.63%	7.7	781	7.9	402	41.39%
27	7.0	858	13	487	41.63%	7.8	783	7.9	402	41.39%
29	3.0	803	13	487	41.63%	7.7	798	7.8	402	41.39%
Feb 1, 96	2.0	804	13	487	41.63%	7.6	820	7.8	402	41.39%
9	3.0	781	12.8	480	41.51%	7.7	822	7.9	402	41.39%
12	4.0	787	12.7	481	41.27%	7.4	826	7.9	402	41.39%
13	3.5	784	12.7	491	41.27%	7.4	9	7.8	492	32.18%
14	5.0	445	12.5	493	41.03%	7.4	20	7.8	492	32.18%
20	5.0	854	12.5	493	41.03%	7.8	22	7.8	492	32.18%
21	5.0	112	12.4	495	40.91%	7.8	26	7.8	492	32.18%
22	5.0	753	12.3	496	40.79%	7.8	57	7.8	492	32.18%
23	8.0	288	12.2	497	40.55%	7.7	63	7.8	492	32.18%
27	10.0	797	12.2	497	40.55%	7.8	84	7.8	492	32.18%
28	11.0	859	12.1	499	40.43%	7.8	127	7.8	492	32.18%
Mar 5, 96	8.0	87	12	500	38.04%	7.6	138	7.8	492	32.18%
6	9.0	88	12	500	38.04%	8.1	145	7.8	492	32.18%
7	8.0	84	12	500	38.04%	7.9	147	7.8	492	32.18%
10	0.0	86	12	500	38.04%	7.8	151	7.8	492	32.18%
11	5.0	282	12	500	38.04%	8.1	152	7.8	492	32.18%
16	8.0	284	12	500	38.04%	7.9	168	7.8	492	32.18%
20	8.0	300	12	500	38.04%	7.8	172	7.8	492	32.18%
28	7.0	301	12	500	38.04%	7.7	173	7.8	492	32.18%
29	8.0	322	12	500	38.04%	7.6	174	7.8	492	32.18%
Apr 1, 96	10	342	12	500	38.04%	7.9	176	7.8	492	32.18%
2	9.0	453	12	500	38.04%	7.6	212	7.8	492	32.18%
3	10.0	454	12	500	38.04%	7.6	239	7.8	492	32.18%
4	12.0	512	12	500	38.04%	7.8	248	7.8	492	32.18%
9	8.5	758	12	500	38.04%	7.9	249	7.8	492	32.18%
10	8.0	782	12	500	38.04%	7.8	350	7.8	492	32.18%
16	13.0	788	12	500	38.04%	8.4	369	7.8	492	32.18%
20	14.0	795	12	500	38.04%	8	380	7.8	492	32.18%
24	14.0	796	12	500	38.04%	8.2	381	7.8	492	32.18%
30	14.0	799	12	500	38.04%	8.2	384	7.8	492	32.18%
May 1, 96	17.0	800	12	500	38.04%	8.2	390	7.8	492	32.18%
2	18.0	69	11.7	520	37.80%	7.6	400	7.8	492	32.18%
4	18.0	685	11.7	520	37.80%	8.2	401	7.8	492	32.18%
6	17.0	86	11	522	35.89%	7.4	402	7.8	492	32.18%
7	16.0	75	11	522	35.89%	7.6	405	7.8	492	32.18%
8	15.0	76	11	522	35.89%	7.8	411	7.8	492	32.18%
9	18.0	82	11	522	35.89%	8.3	458	7.8	492	32.18%
16	14.0	83	11	522	35.89%	7.6	460	7.8	492	32.18%
17	16.0	265	11	522	35.89%	7.8	462	7.8	492	32.18%
18	21.0	268	11	522	35.89%	7.2	466	7.8	492	32.18%
19	17.0	270	11	522	35.89%	7.4	468	7.8	492	32.18%
20	21.0	490	11	522	35.89%	7.8	469	7.8	492	32.18%
22	22.0	758	11	522	35.89%	7.5	495	7.8	492	32.18%
25	15.0	782	11	522	35.89%	7.4	496	7.8	492	32.18%
28	17.0	789	11	522	35.89%	7.6	498	7.8	492	32.18%
29	17.0	771	11	522	35.89%	7.8	499	7.8	492	32.18%
30	13.0	779	11	522	35.89%	8.1	505	7.8	492	32.18%
Jun 4, 96	17.0	792	11	522	35.89%	7.7	506	7.8	492	32.18%
5	18.0	798	11	522	35.89%	7.7	510	7.8	492	32.18%
8	18.7	713	10.9	538	35.65%	7.9	512	7.8	492	32.18%
9	21.0	714	10.9	538	35.65%	7.9	514	7.8	492	32.18%
11	23.7	793	10.8	540	35.53%	7.5	520	7.8	492	32.18%
12	23.7	862	10.8	541	35.29%	7.4	527	7.8	492	32.18%
13	23.2	760	10.6	541	35.29%	7.6	530	7.8	492	32.18%
14	23.0	458	10.5	543	35.05%	7.6	538	7.8	492	32.18%
15	25.0	787	10.5	543	35.05%	7.7	539	7.8	492	32.18%
17	24.0	770	10.3	545	34.93%	7.7	546	7.8	492	32.18%
18	25.0	779	10.1	546	34.81%	7.8	547	7.8	492	32.18%
19	26.0	79	10	547	32.78%	7.8	548	7.8	492	32.18%
20	24.0	299	10	547	32.78%	7.8	549	7.8	492	32.18%
21	24.0	302	10	547	32.78%	7.9	550	7.8	492	32.18%
22	23.0	455	10	547	32.78%	7.9	551	7.8	492	32.18%
23	24.0	456	10	547	32.78%	7.6	557	7.8	492	32.18%
24	26.0	486	10	547	32.78%	7.6	561	7.8	492	32.18%
25	25.0	498	10	547	32.78%	7.8	589	7.8	492	32.18%
26	24.0	509	10	547	32.78%	7.8	592	7.8	492	32.18%
27	26.0	511	10	547	32.78%	7.6	600	7.8	492	32.18%
28	23.0	707	10	547	32.78%	7.8	604	7.8	492	32.18%
29	23.0	715	10	547	32.78%	7.9	614	7.8	492	32.18%
Jul 1, 96	25.0	784	10	547	32.78%	7.7	683	7.8	492	32.18%
2	25.0	785	10	547	32.78%	7.8	686	7.8	492	32.18%
3	22.0	786	10	547	32.78%	7.9	731	7.8	492	32.18%
4	19.0	775	10	547	32.78%	7.8	745	7.8	492	32.18%
5	21.0	776	10	547	32.78%	7.8	754	7.8	492	32.18%
6	23.0	788	10	547	32.78%	7.5	755	7.8	492	32.18%
7	21.0	708	9.9	584	32.66%	7.6	757	7.8	492	32.18%
8	24.0	457	9.8	585	32.54%	7.5	758	7.8	492	32.18%
9	24.0	678	9.5	586	32.42%	7.5	774	7.8	492	32.18%
10	24.0	712	9.3	587	32.30%	7.5	796	7.8	492	32.18%
11	22.0	51	9	588	28.83%	7.5	823	7.8	492	32.18%
12	21.0	58	9	588	28.83%	7.6	13	7.7	589	24.04%
13	23.0	65	9	588	28.83%	7.5	17	7.7	589	24.04%
15	25.0	70	9	588	28.83%	7.6	25	7.7	589	24.04%
16	24.0	71	9	588	28.83%	7.8	29	7.7	589	24.04%
17	24.0	74	9	588	28.83%	7.7	30	7.7	589	24.04%
18	25.0	273	9	588	28.83%	7.6	69	7.7	589	24.04%
19	25.0	274	9	588	28.83%	7.4	70	7.7	589	24.04%
20	23.0	282	9	588	28.83%	7.5	72	7.7	589	24.04%
21	24.0	303	9	588	28.83%	7.4	76	7.7	589	24.04%
22	23.5	304	9	588	28.83%	7.5	133	7.7	589	24.04%
23	25.3	305	9	588	28.83%	7.6	137	7.7	589	24.04%
24	24.3	316	9	588	28.83%	7.4	197	7.7	589	24.04%
25	24.8	317	9	588	28.83%	7.8	205	7.7	589	24.04%
26	24.0	324	9	588	28.83%	8.3	207	7.7	589	24.04%
28	20.0	325	9	588	28.83%	7.9	213	7.7	589	24.04%
29	23.0	326	9	588	28.83%	7.4	220	7.7	589	24.04%
30	24.0	484	9	588	28.83%	7.5	221	7.7	589	24.04%
31	24.0	501	9	588	28.83%	7.7	222	7.7	589	24.04%
Aug 1, 96	24.0	510	9	588	28.83%	7.6	228	7.7	589	24.04%
2	24.0	604	9	588	28.83%	7.7	230	7.7	589	24.04%
3	24.0	732	9	588	28.83%	7.8	240	7.7	589	24.04%
4	23.0	755	9	588	28.83%	7.7	299	7.7	589	24.04%
5	25.0	783	9	588	28.83%	7.7	313	7.7	589	24.04%
6	27.0	773	9	588	28.83%	7.8	325	7.7	589	24.04%
7	26.0	777	9	588	28.83%	7.5	328	7.7	589	24.04%
8	23.0	781	9	588	28.83%	7.6	335	7.7	589	24.04%
9	25.0	783	9	588	28.83%	7.5	346	7.7	589	24.04%

	10	25.0	787	9	588	28.83%	7.5	399	7.7	589	24.04%
	11	25.0	879	8.8	597	28.50%	7.5	407	7.7	589	24.04%
	12	22.0	892	8.9	597	28.59%	7.5	433	7.7	589	24.04%
	13	22.0	711	8.8	598	28.47%	7.5	434	7.7	589	24.04%
	14	21.5	883	8.7	600	28.29%	7.8	461	7.7	589	24.04%
	15	22.0	708	8.7	600	28.25%	8.1	465	7.7	589	24.04%
	16	25.0	72	8.6	602	27.87%	8.1	464	7.7	589	24.04%
	17	22.0	754	8.6	602	27.87%	8	467	7.7	589	24.04%
	20	22.8	780	8.6	602	27.87%	7.8	472	7.7	589	24.04%
	21	25.8	513	8.5	605	27.75%	7.9	483	7.7	589	24.04%
	22	25.0	881	8.4	606	27.83%	7.9	488	7.7	589	24.04%
	24	26.3	895	8.2	607	27.51%	7.7	488	7.7	589	24.04%
	25	24.0	688	8.1	608	27.27%	8.2	495	7.7	589	24.04%
	26	21.0	897	8.1	608	27.27%	7.7	497	7.7	589	24.04%
	27	24.5	52	8	610	23.44%	7.9	507	7.7	589	24.04%
	28	21.9	57	8	610	23.44%	7.8	536	7.7	589	24.04%
	30	21.5	83	8	610	23.44%	7.9	537	7.7	589	24.04%
	31	25.8	84	8	610	23.44%	8.1	544	7.7	589	24.04%
Sep 1, 96		22.3	73	8	610	23.44%	7.8	545	7.7	589	24.04%
	2	21.4	271	8	610	23.44%	7.5	558	7.7	589	24.04%
	3	22.8	276	8	610	23.44%	8.4	573	7.7	589	24.04%
	4	23.1	277	8	610	23.44%	8.1	586	7.7	589	24.04%
	5	24.0	281	8	610	23.44%	8.2	588	7.7	589	24.04%
	6	21.2	306	8	610	23.44%	7.9	590	7.7	589	24.04%
	7	21.6	315	8	610	23.44%	7.9	591	7.7	589	24.04%
	8	21.1	320	8	610	23.44%	7.8	607	7.7	589	24.04%
	9	24.9	323	8	610	23.44%	8	609	7.7	589	24.04%
	11	23.7	462	8	610	23.44%	8	640	7.7	589	24.04%
	12	23.8	465	8	610	23.44%	8	643	7.7	589	24.04%
	13	22.2	467	8	610	23.44%	8	674	7.7	589	24.04%
	14	18.0	497	8	610	23.44%	7.8	724	7.7	589	24.04%
	18	19.8	502	8	610	23.44%	8	756	7.7	589	24.04%
	17	20.7	505	8	610	23.44%	8	759	7.7	589	24.04%
	20	21.4	508	8	610	23.44%	7.9	769	7.7	589	24.04%
	21	18.4	508	8	610	23.44%	7.9	775	7.7	589	24.04%
	24	18.5	514	8	610	23.44%	8.1	795	7.7	589	24.04%
	25	19.9	674	8	610	23.44%	8.3	811	7.7	589	24.04%
	26	17.5	680	8	610	23.44%	8.3	812	7.7	589	24.04%
	30	18.0	710	8	610	23.44%	8	818	7.7	589	24.04%
Oct 2, 96		19.3	738	8	610	23.44%	8.2	825	7.7	589	24.04%
	4	15.7	752	8	610	23.44%	8.1	831	7.7	589	24.04%
	5	13.8	758	8	610	23.44%	7.5	8	7.6	637	15.19%
	8	14.0	757	8	610	23.44%	7.4	14	7.6	637	15.19%
	9	15.7	788	8	610	23.44%	8.2	15	7.8	637	15.19%
	10	14.0	772	8	618	23.44%	7.7	18	7.8	637	15.19%
	12	14.0	774	8	618	23.44%	8.4	21	7.8	637	15.19%
	13	15.8	54	7.8	642	23.21%	8.1	23	7.8	637	15.19%
	17	17.7	698	7.8	642	23.21%	7.7	58	7.6	637	15.19%
	18	14.5	880	7.7	644	23.09%	8.7	77	7.6	637	15.19%
	20	13.7	685	7.8	646	22.73%	8.2	126	7.6	637	15.19%
	21	13.1	688	7.8	646	22.73%	8	132	7.8	637	15.19%
	22	14.5	872	7.8	646	22.73%	8	163	7.8	637	15.19%
	23	15.5	881	7.5	648	22.81%	8.1	169	7.8	637	15.19%
	24	14.4	869	7.4	648	22.49%	8.1	170	7.8	637	15.19%
	25	13.7	709	7.3	650	22.13%	8.1	176	7.8	637	15.19%
	26	15.4	718	7.3	650	22.13%	8.1	184	7.8	637	15.19%
	27	14.7	735	7.3	650	22.13%	8.3	188	7.8	637	15.19%
	28	15.4	889	7.2	653	22.01%	8.1	190	7.8	637	15.19%
	29	12.5	97	7	654	19.02%	8.2	194	7.8	637	15.19%
	30	15.3	48	7	654	19.02%	8.2	198	7.8	637	15.19%
	31	14.4	50	7	654	19.02%	8.2	201	7.8	637	15.19%
Nov 1, 96		13.0	53	7	654	19.02%	8.1	203	7.8	637	15.19%
	2	13.0	55	7	654	19.02%	8.2	208	7.8	637	15.19%
	8	12.1	56	7	654	19.02%	8.2	211	7.8	637	15.19%
	8	14.9	59	7	654	19.02%	8.1	215	7.8	637	15.19%
	9	13.2	61	7	654	19.02%	8.2	218	7.8	637	15.19%
	10	10.6	67	7	654	19.02%	8	219	7.8	637	15.19%
	11	11.7	272	7	654	19.02%	8.1	223	7.8	637	15.19%
	14	6.6	280	7	654	19.02%	7.9	224	7.8	637	15.19%
	16	7.6	288	7	654	19.02%	8.2	225	7.8	637	15.19%
	17	8.1	307	7	654	19.02%	8	243	7.8	637	15.19%
	18	5.3	318	7	654	19.02%	7.9	252	7.8	637	15.19%
	19	7.8	319	7	654	19.02%	8.1	312	7.8	637	15.19%
	21	7.8	458	7	654	19.02%	8	329	7.8	637	15.19%
	22	7.0	460	7	654	19.02%	8.1	398	7.8	637	15.19%
	23	6.1	481	7	654	19.02%	8.1	452	7.8	637	15.19%
	24	7.8	469	7	654	19.02%	8.1	453	7.8	637	15.19%
	25	8.7	487	7	654	19.02%	8	455	7.8	637	15.19%
	26	8.0	507	7	654	19.02%	7.7	471	7.8	637	15.19%
	27	6.7	670	7	654	19.02%	8	475	7.8	637	15.19%
	28	5.4	737	7	654	19.02%	8.2	477	7.8	637	15.19%
	29	4.7	738	7	654	19.02%	8.1	485	7.8	637	15.19%
Dec 1, 96		9.5	740	7	654	19.02%	8.2	487	7.8	637	15.19%
	2	8.8	882	6.9	678	18.66%	8	489	7.8	637	15.19%
	3	8.0	888	6.9	679	18.66%	7.8	494	7.8	637	15.19%
	4	8.4	705	6.8	679	18.66%	8.1	500	7.8	637	15.19%
	5	6.9	684	6.6	682	18.54%	8.1	509	7.8	637	15.19%
	6	5.5	673	6.7	683	18.30%	7.8	511	7.8	637	15.19%
	7	8.8	675	6.7	683	18.30%	8.4	523	7.8	637	15.19%
	8	6.3	664	6.6	685	18.08%	8.4	534	7.8	637	15.19%
	9	5.8	687	6.6	685	18.08%	7.8	526	7.8	637	15.19%
	10	6.6	885	6.3	687	17.84%	8	533	7.8	637	15.19%
	11	8.8	871	6.1	688	17.82%	8.2	534	7.8	637	15.19%
	12	7.2	38	6	689	14.56%	8	542	7.8	637	15.19%
	13	7.7	39	6	689	14.56%	7.6	548	7.8	637	15.19%
	14	7.5	40	6	689	14.56%	8.2	552	7.8	637	15.19%
	15	9.9	41	6	689	14.56%	8.2	563	7.8	637	15.19%
	16	8.7	80	6	689	14.56%	8	554	7.8	637	15.19%
	17	9.0	275	6	689	14.56%	8.4	555	7.6	637	15.19%
	18	8.2	278	6	689	14.56%	8.2	556	7.8	637	15.19%
	19	7.8	279	6	689	14.56%	8.1	558	7.8	637	15.19%
	20	8.1	287	6	689	14.56%	8.2	562	7.8	637	15.19%
	21	3.5	293	6	689	14.56%	8	564	7.8	637	15.19%
	22	3.1	297	6	689	14.56%	8	569	7.6	637	15.19%
	23	5.0	328	6	689	14.56%	8.1	571	7.6	637	15.19%
	24	5.4	334	6	689	14.56%	8.2	572	7.6	637	15.19%
	25	5.4	478	6	689	14.56%	8.1	574	7.8	637	15.19%
	26	4.6	471	6	689	14.56%	8	579	7.8	637	15.19%
	27	5.5	472	6	688	14.56%	8.1	581	7.8	637	15.19%
	28	6.8	473	6	688	14.56%	8.1	587	7.8	637	15.19%
	29	9.6	474	6	688	14.56%	8	594	7.6	637	15.19%
	30	10.0	484	6	688	14.56%	8.3	888	7.6	637	15.19%
	31	8.7	500	6	689	14.56%	8.2	818	7.6	637	15.19%
Jan 1, 97		7.3	729	6	689	14.56%	8	824	7.8	637	15.19%
	2	8.0	729	6	689	14.56%	8.1	835	7.8	637	15.19%
	3	8.8	736	6	689	14.56%	8.2	24	7.5	711	8.49%
	4	9.3	744	6	689	14.56%	8.1	134	7.5	711	8.49%
	5	10.9	747	6	689	14.56%	8.1	164	7.5	711	8.49%
	6	10.9	750	6	689	14.56%	8.2	175	7.5	711	8.49%
	7	10.0	751	6	688	14.56%	8	177	7.5	711	8.49%
	8	7.5	686	5.8	716	14.47%	8	183	7.5	711	8.49%
	9	5.7	693	5.5	717	14.11%	8.1	191	7.5	711	8.49%
	10	5.0	704	5.5	717	14.11%	7.9	192	7.5	711	8.49%
	11	1.8	748	5.5	717	14.11%	8.1	193	7.5	711	8.49%
	12	2.4	678	5.4	720	13.52%	8.1	198	7.5	711	8.49%
	14	2.0	701	5.4	720	13.52%	8	202	7.5	711	8.49%
	15	2.0	702	5.4	720	13.52%	8.1	208	7.5	711	8.49%
	16	4.0	741	5.4	720	13.52%	8	214	7.5	711	8.49%
	17	3.4	742	5.4	720	13.52%	7.7	216	7.5	711	8.49%
	18	1.7	667	5.3	725	13.29%	8.2	217	7.5	711	8.49%
	19	0.9	730	5.3	725	13.29%	8.2	226	7.5	711	8.49%
	21	2.0	36	5	727	10.05%	8	231	7.5	711	8.49%
	23	6.8	42	5	727	10.05%	8.1	242	7.5	711	8.49%
	24	6.8	45	5	727	10.05%	8	307	7.5	711	8.49%
	25	5.3	49	5	727	10.05%	8.3	322	7.5	711	8.49%
	26	4.1	283	5	727	10.05%	7.8	324	7.5	711	8.49%
	28	9.0	286	5	727	10.05%	7.9	329	7.5	711	8.49%
	29	4.9	312	5	727	10.05%	8	454	7.5	711	8.49%
	31	5.0	314	5	727	10.05%	8.1	470	7.5	711	8.49%
Feb 1, 97		7.3	321	5	727	10.05%	8	473	7.5	711	8.49%
	2	8.0	488	5	727	10.05%	8.1	474	7.5	711	8.49%
	4	7.0	475	5	727	10.05%	8.1	476	7.5	711	8.49%
	5	8.0	476	5	727	10.05%	7.8	479	7.5	711	8.49%
	6	7.0	480	5	727	10.05%	8.1	480	7.5	711	8.49%
	7	7.0	481	5	727	10.05%	8	481	7.5	711	8.49%
	8	5.4	482	5	727	10.05%	7.9	484	7.5	711	8.49%
	9	5.4	483	5	727	10.05%	7.9	531	7.5	711	8.49%
	10	5.0	485	5	727	10.05%	7.9	540	7.5	711	8.49%
	11	8.0	486	5	727	10.05%	7.9	583	7.5	711	8.49%
	12	4.0	493	5	727	10.05%	7.8	585	7.5	711	8.49%
	13	3.0	494	5	727	10.05%	8.1	586	7.5	711	8.49%
	14	8.8	495	5	727	10.05%	8	587	7.5	711	8.49%
	15	4.5	498	5	727	10.05%	7.9	588	7.5	711	8.49%
	16	5.5	504	5	727	10.05%	8.1	570	7.5	711	8.49%
	17	8.0	700	5	727	10.05%	7.9	578	7.5	711	8.49%
	18	6.9	718	5	727	10.05%	7.9	578	7.5	711	8.49%
	20	8.0	734	5	727	10.05%	8.1	585	7.5	711	8.49%
	22	12.3	743	5	727	10.05%	8	593	7.5	711	8.49%
	23	8.8	877	4.7	754	9.93%	7.8	596	7.5	711	8.49%
	24	9.0	709	4.6	755	9.91%	7.8	598	7.5	711	8.49%
	25	8.0	748	4.5	756	9.89%	7.7	587	7.5	711	8.49%
	26	8.0	7	4.1	757	9.45%	7.8	588	7.5	711	8.49%
	27	11.0	731	4.1	757	9.45%	7.8	590	7.5	711	8.49%
	28	12.0	6	4	758	7.30%	7.7	615	7.5	711	8.49%
Mar 1, 97		10.6	24	4	758	7.30%	8.1	637	7.5	711	8.49%
	2	12.9	35	4	758	7.30%	8.2	758	7.5	711	8.49%
	3	11.0	43	4	758	7.30%	8	782	7.5	711	8.49%
	4	9.0	44	4	758	7.30%	8	795	7.5	711	8.49%
	5	10.0	284	4	758	7.30%	8.2	826	7.5	711	8.49%
	6	10.0	285	4	758	7.30%	7.9	836	7.5	711	8.49%
	7	8.0	295	4	758	7.30%	7.9	857	7.5	711	8.49%
	8	10.5	308	4	758	7.30%	8.2	37	7.4	787	4.78%
	9	10.0	309	4	758	7.30%	7.5	181	7.4	787	4.78%
	10	11.0	315	4	758	7.30%	7.7	192	7.4	787	4.78%
	11	10.3	466	4	758	7.30%	8.3	200	7.4	787	4.78%
	13	11.0	477	4	758	7.30%	8	204	7.4	787	4.78%
	14	8.0	478	4	758	7.30%	8	208	7.6	787	4.78%
	15	9.0	481	4	758	7.30%	7.9	210	7.4	787	4.78%
	17	8.0	728	4	759	7.30%	7.8	241	7.4	787	4.78%
	18	10.0	735	4	758	7.30%	7.7	293	7.4	787	4.78%
	19	10.0	745	4	758	7.30%	8	300	7.4	787	4.78%
	20	9.0	717	3.7	777	7.19%	7.9	344	7.4	787	4.78%
	21	11.0	3	3.5	778	8.82%	7.9	348	7.4	787	4.78%
	22	10.1	482	3.5	779	8.82%	8.1	352	7.4	787	4.78%
	23	6.8	698	3.5	778	8.82%	8.2	482	7.4	787	4.78%
	25	9.0	726	3.4	781	8.79%	7.9	491	7.4	787	4.78%
	26	12.0	689	3.1	792	8.58%	8.2	492	7.4	787	4.78%
	27	9.0	4	3	783	4.55%	7.8	493	7.4	787	4.78%
	29	12.7	10	3	783	4.55%	8.2	522	7.4	787	4.78%
	30	13.8	11	3	783	4.55%	7.7	529	7.4	787	4.78%
	31	12.8	12	3	783	4.55%	7.9	532	7.4	787	4.78%
Apr 1, 97		9.8	19	3	783	4.55%	8.2	541	7.4	787	4.78%
	5	10.8	25	3	783	4.55%	8.8	575	7.4	787	4.78%
	5	15.5	26	3	783	4.55%	8.1	577	7.4	787	4.78%
	6	15.8	27	3	783	4.55%	8.3	580	7.4	787	4.78%
	9	14.0	34	3	783	4.55%	7.4	584	7.4	787	4.78%
	11	11.0	47	3	783	4.55%	7.5	838	7.4	787	4.78%
	12	10.9	288	3	783	4.55%	8.1	791	7.4	787	4.78%
	13	14.5	289	3	783	4.55%	8.1	813	7.4	787	4.78%
	15	12.0	294	3	783	4.55%	7.5	827	7.4	787	4.78%
	16	12.0	295	3	783	4.55%	7.8	829	7.4	787	4.78%
	19	12.2	488	3	783	4.55%	8.1	830	7.4	787	4.78%
	23	11.0	489	3	783	4.55%	8.2	135	7.3	798	3.83%
	24	12.0	748	3	783	4.55%	8.1	188	7.3	798	3.83%
	25	12.0	478	2.5	800	4.43%	8.3	189	7.3	798	3.83%
	26	14.4	48	2.4	801	4.19%	8.5	286	7.3	798	3.83%
	27	13.4	720	2.4	801	4.19%	8.8	333	7.3	798	3.83%
	28	13.0	1	2.3	803	4.07%	8	530	7.3	798	3.83%
	29	15.0	2	2	804	2.27%	8.1	478	7.3	798	3.83%
May 3, 97		15.8	5	2	804	2.27%	8.1	817	7.3	798	3.83%
	8	17.0	8	2	804	2.27%	8	38	7.2	806	2.39%
	11	17.2	9	2	804	2.27%	8.1	136	7.2	806	2.39%
	15	15.0	17	2	804	2.27%	8	195	7.2	806	2.39%
	17	14.5	29	2	804	2.27%	8	274	7.2	806	2.39%
	18	21.3	32	2	804	2.27%	8.2	277	7.2	806	2.39%
	20	20.0	33	2	804	2.27%	7.7	301	7.2	806	2.39%
	24	20.0	292	2	804	2.27%	7.7	330	7.2	806	2.39%
	25	20.0	311	2	804	2.27%	7.4	336	7.2	806	2.39%
	26	20.0	428	2	804	2.27%	7.2	348	7.2	806	2.39%
	29	18.0	480	2	804	2.27%	8.1	528	7.2	806	2.39%
	31	20.9	721	2	804	2.27%	7.8	814	7.2	806	2.39%
Jun 1, 97		21.1	722	2	804	2.27%	7.5	834	7.2	806	2.39%
	2	21.6	727	2	804	2.27%	7.7	18	7.1	818	1.44%
	4	17.8	719	1.8	819	2.15%	8.1	186	7.1	818	1.44%
	5	17.0	725	1.7	820	2.03%	7.9	256	7.1	818	1.44%
	10	18.0	14	1	821	0.98%	8.5	278	7.1	818	1.44%
	11	20.0	19	1	821	0.98%	7.9	282	7.1	818	1.44%
	13	23.0	20	1	821	0.98%	7.8	330	7.1	818	1.44%
	14	23.0	21	1	821	0.98%	7.8	127	7.1	818	1.44%
	15	22.0	23	1	821	0.98%	7.7	345	7.1	818	1.44%
	16	23.0	31	1	821	0.98%	7.9	120	7	826	0.36%
	17	22.8	280	1	821	0.98%	7.4	257	7	826	0.36%
	19	25.0	281	1	821	0.98%	7.5	261	7	826	0.36%
	21	28.0	310	1	821	0.98%	7.4	263	7	826	0.36%
	22	28.0	726	0.9	830	0.84%	7.4	286	7	826	0.36%
	23	25.0	13	0	831	0.00%	7.7	288	7	826	0.36%
	25	25.0	15	0	831	0.00%	7	351	7	826	0.36%
	26	26.0	16	0	831	0.00%	7	832	7	826	0.36%
	27	25.0	22	0	831	0.00%	7.2	833	7	826	0.36%
	28	24.0	29	0	831	0.00%	7.8	267	6.7	835	0.24%
	29	26.0	30	0	831	0.00%	7.5	285	6.6	836	0.12%
	30	23.5	583	0	831	0.00%	7.5	294	6.5	837	0.00%

1997 Ammonia Criteria Calculation

Ammonia Calculation - Acute for Non Trout Waters

	Temperature	pH	
DATA ENTRY:->	25	8.3	**Camp Happyland Year Round**

FT

FT=10^((.03)(20-25) if 25<=T<=30 = 0.7079458
FT=10^((.03)(20-T) if 0<=T<25 = NA
FT= ***0.7079458***

FPH

FPH=1 if 8.0<=pH<=9.0 = 1.0000000
FPH=((1+10^(7.4-pH))/1.25 if 6.5<=pH<8.0 = NA
FPH= 1

Acute Criteria Concentration=.52/FT/FPH/2 = **0.3672598**

Conversion from un-ionized to Total Ammonia can be calculated by using the following formulas:
Total Acute Ammonia Criteria = Calculated un-ionized ammonia criteria divided by fraction of un-ionized Ammonia
Where: Fraction of un-ionized ammonia = 1/(10^(pKa-pH) +1) **Fraction= 0.1019652**
where: pKa = 0.09018 + (2729.92/273.2 + temperature 'C,) **pKa = 9.2448413**
Total Acute Ammonia Criteria = Calculated un-ionized Ammonia Criteria divided by fraction of un-ionized Ammonia
Total Acute Ammonia Criteria = **0.3672598** / **0.1019651768** = Total Ammonia = **3.6018156 mg/l**

Total Ammonia is then converted to Ammonia-Nitrogen.
TOTAL ACUTE N-NH3 **3.6018156 X .824** **2.9678960 MG/L** = **2.97**

Ammonia Calculation - Chronic for Non Trout Waters

	Temperature	pH	
DATA ENTRY:->	25	8.3	**Camp Happyland Year Round**

FT

FT=10^((.03)(20-20)) if 20<=T<=30 = 1.0000000
FT=10^((.03)(20-T)) if 0<=T<20 = NA
FT= 1

FPH

FPH=1 if 8.0<=pH<=9.0 = 1.0000000
FPH=((1+10^(7.4-pH))/1.25 if 6.5<=pH<8.0 = NA
FPH= 1

Ratio

Ratio = 13.5 if 7.7<=pH<=9.0 = 13.5
Ratio = 20.25 x (10^(7.7-pH))/(1+(10^(7.4-pH)) if 6.5<=pH<7.7 = NA
Ratio = **13.5**

Chronic Criteria Concentration=.8/FT/FPH/RATIO = **0.0592593**

Conversion from un-ionized to Total Ammonia can be calculated by using the following formulas:
Total Acute Ammonia Criteria = Calculated un-ionized ammonia criteria divided by fraction of un-ionized Ammonia
Where: Fraction of un-ionized ammonia = 1/(10^(pKa-pH) +1) **Fraction= 0.1019652**
where: pKa = 0.09018 + (2729.92/273.2 + temperature 'C) **pKa = 9.2448413**
Total Acute Ammonia Criteria=Calculated un-ionized Ammonia Criteria divided by fraction of un-ionized Ammonia
Total Acute Ammonia Criteria = **0.0592593** / **0.1019652** = Total Ammonia = **0.58117154 mg/l**

Total Ammonia is then converted to Ammonia-Nitrogen.
TOTAL CHRONIC N-NH3 **0.5811715 X .824** **0.4788854 MG/L** = **0.48**

1997 Ammonia Effluent Limit Calculation

Analysis of the Camp Happyland (VA0074318) Year Round effluent data for ammonia

The statistics for ammonia are:

Number of values	= 1
Quantification level	= .2
Number _ quantification	= 0
Expected value	= 10
Variance	= 36.00001
C.V.	= .6
97th percentile	= 24.33418
Statistics used	= Reasonable potential assumptions - Type 2 data

The WLAs for ammonia are:

Acute WLA	= 2.97
Chronic WLA	= .48
Human Health WLA	= ----

The limits are based on chronic toxicity and 1 samples/month.

Maximum daily limit	= .702036
Average monthly limit	= .7020359

DATA
10

Facility = Camp Happyland
Chemical = Chlorine
Chronic averaging period = 4
WLAa = 0.019
WLAc = 0.011
Q.L. = 0.10
mg/l
samples/mo. = 30
samples/wk. = 7

Summary of Statistics:

observations = 1
Expected Value = 20
Variance = 144
C.V. = 0.6
97th percentile daily values = 48.6683
97th percentile 4 day average = 33.2758
97th percentile 30 day average= 24.1210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.60883226245855E-02
Average Weekly limit = 9.8252545713861E-03
Average Monthly LImit = 7.9737131838758E-03
mg/l

The data are:

20

Attachment 9

8/28/07

MEMORANDUM

State Water Control Board
2111 North Hamilton Street
P. O. Box 11143
Richmond, VA. 23230

SUBJECT: Stream Analysis for Camp Happyland STP Discharge

TO: Dale Phillips, OERS

FROM: Steve Crowther, NRO

DATE: June 25, 1987

The following model calculations have been performed for the existing Camp Happyland STP discharge in Culpeper County. The NPDES permit application indicates that the 0.026 MGD discharge is to a dry ditch which enters an unnamed tributary to Hazel Run.

The stream reach was modeled to maintain the dissolved oxygen water quality standard of 5.0 mg/l. Nitrogenous demand was not incorporated into the model. A stream inspection on May 11, 1987, revealed that the existing treatment lagoon is located at the headwaters of the receiving tributary. The stream had a very low flow resulting from several small springs. No water quality problems were noted. The lagoon had not produced a continuous discharge since the previous summer when camp was in session.

The modeling results indicate that the NPDES permit should include limits of:

BOD_5 = 30 mg/l
DO = 5.0 mg/l

O.K. MJP 7-15-87

I understand that the lagoon will be maintained and that due to its residence time no NBOD is expected.

Attachment 10

MEMORANDUM

State Water Control Board
2111 North Hamilton Street P. O. Box 11143 Richmond, VA. 232

SUBJECT: Stream Analysis for Camp Happyland STP Discharge

TO: Dale Phillips, OERS

FROM: Steve Crowther, NRO

DATE: June 25, 1987

The following model calculations have been performed for the existing Camp Happyland STP discharge in Culpeper County. The NPDES permit application indicates that the 0.026 MGD discharge is to a dry ditch which enters an unnamed tributary to Hazel Run.

The stream reach was modeled to maintain the dissolved oxygen water quality standard of 5.0 mg/l. Nitrogenous demand was not incorporated into the model. A stream inspection on May 11, 1987, revealed that the existing treatment lagoon is located at the headwaters of the receiving tributary. The stream had a very low flow resulting from several small springs. No water quality problems were noted. The lagoon had not produced a continuous discharge since the previous summer when camp was in session.

The modeling results indicate that the NPDES permit should include limits of:

BOD_5 = 30 mg/l
DO = 5.0 mg/l

$C_{l_2} = \frac{(.026 + .013)(.011)}{.026} = .0165$

C_{l_2} Decay

Time $= \frac{.41 \text{ mi.}}{.2 \text{ ft/s}} = .125$ day

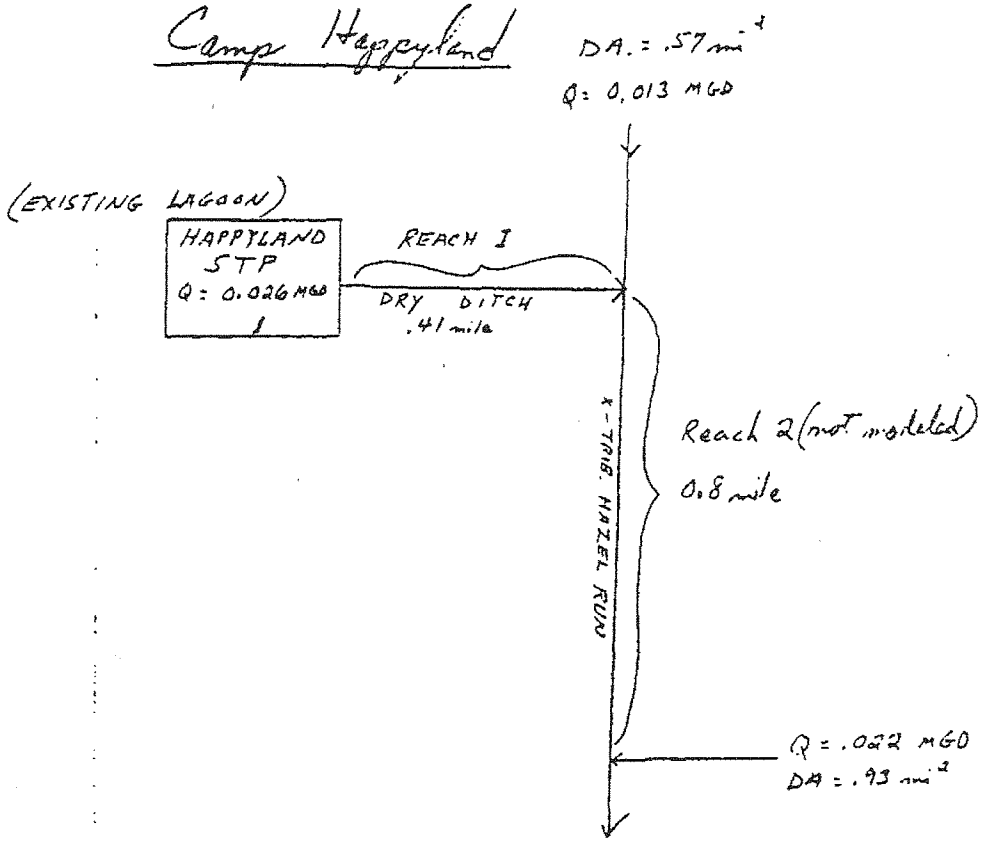
$.0165 = C_o e^{(-1)(.125)}$

$C_o = .019$ mg/l

C_{l_2} = nondetect

Dale gave OK (verbal) to me on 7-15-87. Will send up front cover with his signature & notes.

Camp Happyland



Flow upstream of Camp Happyland = 0 MGD

Reach 1 – Modeled to meet 5.0 mg/l in stream.

Assume: STP DO = 5.0 mg/l

BOD_5 = 30 mg/l

$$BOD_5 = \frac{75(.026) + 0}{.026} = 75 \text{ mg/l}$$

K_1 for 30 mg/l = .214 $(1.047)^{10}$ = .338

$DO_f = \frac{5.0\,(.126) + 0}{.026} = 5.0$ mg/l

$DO_{SAT} = 7.6\,(1 - .00003(300))$

$= 7.53$ 90% = 6.78

$D_a = 7.53 - 5.0 = 2.53$

K_2, Using Tsivoglou/Wallace equation: $v = .2$ ft/s

slope = 60 ft/mile

C = .056 above 10 mg/l, .11 below 10 mg/l

$K_2 = 4235.36$ US

$= 9.6$

[12]

or $K_2 = (.025)(24)\left(\frac{\text{day}}{\text{hr}}\right)$

$= 36$

K_2 AVG = 20 max

$\text{Time} = .41 \text{ mi} = \frac{21640 \text{ ft}}{.2 \text{ ft/s}} = .125$ day

First Reach Data:

75
0
2.53
.338
0
20
.125

Results:

DO end = 6.20

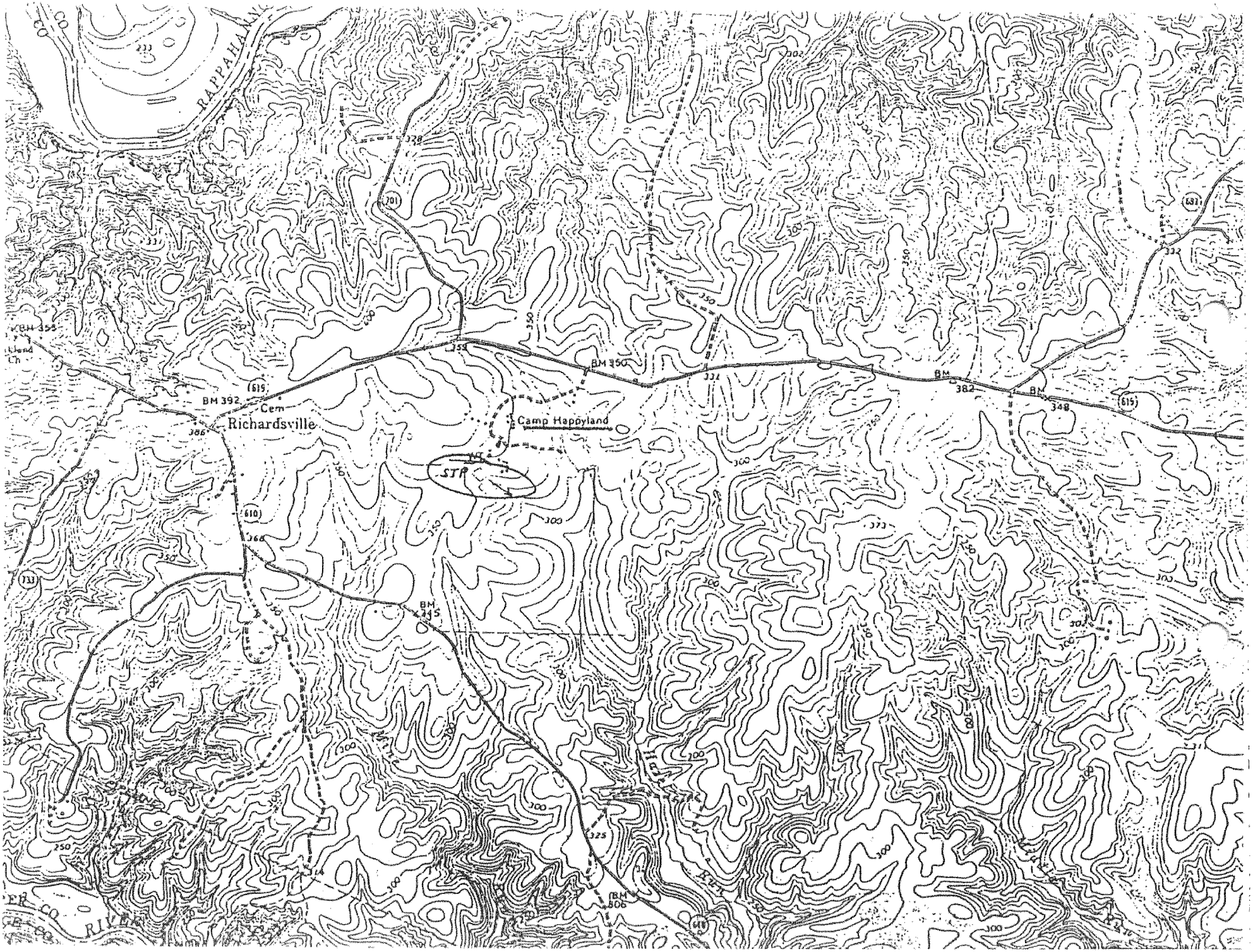
DO_{SAG} = 5.42

Camp Haggyland

FIRST REACH

STP: BOD_5 =	30	30	30	30	30
(AFTER MIX)					
L_a BOD_u	75	75	75	75	75
NOD_u	—	—	—	—	—
D_a	2.53	2.53	2.53	2.53	2.53
K_1	.338	.676	.338	.406	.439
K_n	—	—	—	—	—
K_a	20	20	10	16	14
STEP	.02	.02	.02	.02	.02
DO_{SAT}	7.53	7.53	7.53	7.53	7.53
90% DO_{SAT}	—	—	—	—	—
t (Jay)	.125	.125	.125	.125	.125
DO_{SAG}	5.42	5.00	5.00	5.17	5.05
DO and	6.20	5.12	5.04	5.59	5.21
Sensitivity	As calculated	Double K_1	Halve K_2	20% change in K_1 and K_2	30% Δ in K_1 and K_2
Acceptable	✓	✓	✓	✓	✓

First reach modeled to maintain DO = 5.0 mg/l in stream.


RAPPAHANNOCK
Richardsville
Cem
Camp Happyland
STP
BM 392
BM 350
BM 382
BM 348
BM 345
BM 306
RIVER

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Culpeper County, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2012 to 5:00 p.m. on XXX, 2012

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Salvation Army, 2626 Pennsylvania Ave, NW, Washington DC 20037, VA0074381

PROJECT DESCRIPTION: Salvation Army has applied for a reissuance of a permit for the private Camp Happyland Wastewater Treatment Plant. The applicant proposes to release treated sewage wastewater from the campground area at a rate of 0.026 million gallons per day into a water body. The sludge will be disposed by hauling it to the Remington WWTP (VA0076805) for further treatment. The facility proposes to release treated sewage water in the unnamed tributary to Hazel River in Culpeper County in the Rappahannock River watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, BOD_5, Chlorine, *E.coli*, Total Suspended Solids, Dissolved Oxygen, and TKN.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.

Name: Joan C. Crowther
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3925 E-mail: joan.crowther@deq.virginia.gov Fax: (703) 583-3821

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Camp Happyland
NPDES Permit Number:	VA0074381
Permit Writer Name:	Joan C. Crowther
Date:	October 26, 2012

Major [ ] **Minor** [x] **Industrial** [ ] **Municipal** [x]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	x		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	x		
3. Copy of Public Notice?	x		
4. Complete Fact Sheet?	x		
5. A Priority Pollutant Screening to determine parameters of concern?	x		
6. A Reasonable Potential analysis showing calculated WQBELs?	x		
7. Dissolved Oxygen calculations?	x		
8. Whole Effluent Toxicity Test summary and analysis?		x	
9. Permit Rating Sheet for new or modified industrial facilities?		x	

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		x	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	x		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	x		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?	x		
5. Has there been any change in streamflow characteristics since the last permit was developed?		x	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		x	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	x		
8. Does the facility discharge to a 303(d) listed water?	x		
a. Has a TMDL been developed and approved by EPA for the impaired water?	x		
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			x
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	x		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		x	
10. Does the permit authorize discharges of storm water?		x	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		x	
12. Are there any production-based, technology-based effluent limits in the permit?		x	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		x	
14. Are any WQBELs based on an interpretation of narrative criteria?		x	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		x	
16. Does the permit contain a compliance schedule for any limit or condition?		x	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		x	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	x		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		x	
20. Have previous permit, application, and fact sheet been examined?	x		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs
(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	x		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	x		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	x		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?	x		

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	x		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	x		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			x
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	x		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	x		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		x	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			x

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	x		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?	x		
3. Does the fact sheet provide effluent characteristics for each outfall?	x		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	x		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	x		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	x		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	x		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?		x	
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	x		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	x		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	x		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	x		
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	x		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	x		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			x
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	x		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		x	
4. Does the permit require testing for Whole Effluent Toxicity?		x	

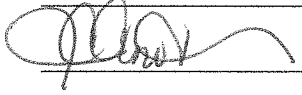
II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	x		
2. Does the permit include appropriate storm water program requirements?		x	

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?		x	
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			x
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		x	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		x	
a. Does the permit require implementation of the "Nine Minimum Controls"?			x
b. Does the permit require development and implementation of a "Long Term Control Plan"?			x
c. Does the permit require monitoring and reporting for CSO events?			x
7. Does the permit include appropriate Pretreatment Program requirements?		x	

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	x		
List of Standard Conditions – 40 CFR 122.41 Duty to comply Duty to reapply Need to halt or reduce activity not a defense Duty to mitigate Proper O & M Permit actions Property rights Duty to provide information Inspections and entry Monitoring and records Signatory requirement Bypass Upset Reporting Requirements Planned change Anticipated noncompliance Transfers Monitoring reports Compliance schedules 24-Hour reporting Other non-compliance			
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?		x	

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Joan C. Crowther
Title	VPDES Permit Writer
Signature	
Date	October 26, 2012